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-WODEL-Frame+ nodel - DEV=xlp
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-0-/cgn2_1/USPTO_Spool/US09763153/runat_11032003_084246_1971/app_query,fasta_1.1415
-1DB-A_Geneseq_1010102 - OFMF#T-fastan - SGFFIX-nodery
-1DSFTO_0-10017PH-262-1 - END=-1 - MATRIX=blosum62 - TRANS=human40 - Cd1
-1DST-60 - DOCALIGN=200 - THR_SCORE-pct - THR_MAX=100 - THR_MIN-0 - ALIGN=20
-1DSFTO_0-10017PH-2FC - NORM=-Xt - HEAPSIZE=500 - MINLEN-0 - MAXLEN-200000000
-1DSFR-USG9763153_@CGN_1 1 81 @ funat_11032003_084246_1971 - NCPU=6 - ICPU-3
-NO_XLPXY - NO_MMAP - LARGEQUERY - NEG_SCORES=0 - WAIT - LONGLOG - DEV_TIMEOUT=120
-WARN_TIMEOUT=30 - THRRADS=1 - XAAPOP=10 - XGAPEXT=0.5 - FGAPOP=6 - FGAPEXT=7
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GenCore version 5.1.4_p5_4578
Copyright (c) 1993 - 2003. Compugen Ltd.
                                                                                    OM nucleic - protein search, using frame_plus_n2p model,
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Maximum Match 100%
Listing first 60 summaries
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ALIGNMENTS

RESULT 1 AAY56803 ID AAY56803 standard; Protein; 415 AA. XX

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

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This represents a human protein C polypeptide having a light chain and a truncated heavy chain. The protein can be produced by standard recombinant methodologies. The truncated protein C is used to treat a wide range of thrombotic or vascular disorders or hypercoagulable states, e.g. stroke; myocardial infarction; unstable anglna; sepsis; adult respiratory distress syndrome; sickle cell anemia etc. The truncated protein C retains the activity of full-length protein C but does not undergo C-terminal cleavage, of the heavy chain, during activation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                               Novel polypeptide useful for treating thrombotic and vascular diseases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein C; truncated; thrombotic disorder; vascular disorder; stroke; hypercoaqulable state; myocardial infarction; unstable angina; sepsis; adult respiratory distress syndrome; sickle cell anemia; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21 IleCysAspPheGluGluAlaLysGluIlePheGluAsnValAspAspThrLeuAlaPhe 40
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                                                 Truncated human protein C polypeptide.
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                                                                                                                                      Homo sapiens.
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301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCGCTGTAGCTGT 360
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                                                                                                                                                                  601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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serpin inactivation; acute coronary syndrome; myocardial infarction; vascular occlusive disorder; hypercoagulable state; angina; sepsis; alcise cell diseases, viral hamolytic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion; thromboembolism; prothrombotic disorder; gene therapy; thalassaemia.
protein C derivative; anticoagulation activity; thrombosis;
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WO200159084-A1.

16-AUG-2001

02-FEB-2001; 2001WO-US01221.

14-MAR-2000; 2000US-0189199. 11-FEB-2000; 2000US-0181948.

(ELIL) LILLY & CO ELI.

Gerlitz BE, Grinnell BW, Jones BE; WPI; 2001-514662/56.

N-PSDB; AAD15223

Protein C derivative for treating acute coronary syndromes, vascular occlusive disorders, thrombotic disorders and sepsis, comprises substitutions at specified amino acid positions

Claim 1; Page 43-44; 59pp; English.

molecules encoding such derivatives. These derivatives have increased molecules encoding such derivatives. These derivatives have increased sensitivity resistance to serpin inactivation and increased sensitivity resistance to serpin inactivation and increased sensitivity to thrombin activation compared to wild type protein c, and retains the biological activity of the wild type human protein C. Protein C derivatives are useful in the manufacture of a infarction and unstable angina; and disease states predisposing to thrombosis; vascular occlusive disorders and hypercoagulable states e.g. thalassagamia, sickle cell disease, viral heamorrhagic fever and permeability increasing protein; thrombolic disorders in combination with bacterial with an anti-platelet agent; protein C deficiency; acute arterial or peripheral arteries or in vascular grafts in combination with a corpustion, thromboembolism or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts in combination with a corpus of thrombolytic agent. Nucleic acid molecules of the invention are useful or peripheral manns with genetically predisposed prothrombolic disorders or in vascular grafts in combination with a corpus of the invention are useful or peripheral experiments. The invention relates to human protein C derivatives and nucleic acid

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US-09-763-153-1 (1-1245) x AAE08625 (1-419)

- 1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG 60 à
- 61 ATCTGIGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120 δ

å å	121 TC	3GTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC	18
3 6	7 7	PSerLysHisValAspGlyAspGlnCysLeuValLeuProLeuGluHisProCysAla	9
A A	181 AG	CGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	240
ΟŸ	241 CG	CAGCGGCTGGGAGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG	300
qq	81 Ar	gSerGlyTrpGluGlyArgPheCysGlnArgGluValSerPheLeuAsnCysSerLeu	
٥y	301 GA	CAACGGCGGCTGCACGCATTACTGCCTAGAGGTGGGGTGGGGCTGGCGGCGCTGTAGCTGT	
ΩD	101 As	pasnGlyGlyCysThrHisTyrCysLeuGluGluValGlyTrpArgArgCysSerCys	
δy	361 GC	GCCTGGCTACAAGCTGGGGGACGTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT	
QQ	121 AL	aProGlyTyrLysLeuGlyAspAspLeuLeuGlnCysHisProAlavalLysPhePro	140
δy	421 TG	TGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA	
qq	141 Cy	sGlyArgPrOTrpLysArgMetGluLysLysArgSerHisLeuLysArgArhThTGlu	
ογ	481 GA(CCAÀGAAGACCAAGTAGATCCGCGGGTCATTGATGGGAAGATGACCAGGGGGGGAACAC	
QQ (161 As	pGlnGluAspGlnValAspProArgieuileAspGlyLysMetThrArgArgGlyAsp	œ
Šī 1	541 AG	CCCTGGCAGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC	009
Q Q	1.81 Se	rProTrpGlnValValLeuLeuAspSerLysLysLysLeuAlaCysGlyAlaValLeu	200
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QQ		IyrHisSerSerArgGluLysGluAlaLysArgAsnArgThrPheValLeuAsnPhe 3	
Qy	9	AAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 10	20
Dp	CI.	.ysIleProvalValProHisAsnGluCysSerGluValMetSerAsnMetValSer 34	0
δλ	~	ACATECTGTGTGGGGGCATCCTCGGGGACCGGCAGGATCCCTGCGAGGGCGACAGT 10	80
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9 3	۔ او	.lyProMetValAlaSerPheHisGlyThrTrpPheLeuValGlyLeuValSerTrp 38	0
주 음 전	1141 GGTG 381 GlyG	<pre>1 GGTGAGGGCTGTGGGGCTCCTCACAACTACGGCGTTTACACCAAAGTCAGCGCGTACGTC 120 1 </pre>	200
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The present sequence is that of human protein C mature polypeptide.

The invention relates to human protein C derivatives having at the invention relates to human protein C derivatives having at least 2 amino acid substitutions, and to recombinant DNA molecules encoding such derivatives. These derivatives have increased anticoagulant activity and resistance to inactivation by serpins activity of the wild-type protein. The amino acid substitutions are activity of the wild-type protein. The amino acid substitutions are selected from H100, 3116, 812K, 032E, N33D, N33E, and amino acids at selected from H100, 218, 249, 254, 302, or 316 of the mature protein c positions 194, 195, 228, 249, 254, 302, or 316 of the mature protein c positions in AAB82675-78. Also claimed are a vector comprising DNA given in AAB82675-78. Also claimed are a vector comprising DNA cercoally the novel human protein C derivatives. transformed host cells and a method of producing the human protein C derivatives.

The protein Gerivatives are useful for treating coronary and disease states predisposing to thrombosis (e.g. myocardial infarction and unstable angina), vascular occlusive myocardial infarction and unstable angina) to combination with an extended agent or by local delivery through an intracoronary catheters, protein C deficiency, acute arterial thrombotic catheters and parterial transfer protein correlations of acute of a coronary coronary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 AGCCIGTGCGGGCACGGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 AICTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21 IleCysaspPheGluGluAlaLysGluIlePheGlnAsnValAspAspThrLeuAlaPhe 40
                                                                                                                                                                                                                                                                                              Novel human protein C derivative for treating, e.g., myocardial infarction, unstable angina, sepsis, thrombotic disorders, acute arterial thrombotic occlusion, and thromboembolism -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   419
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Matches:
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                                                                                                                                                                                                                                                                                                                                                                                            claim 1; Page 49-50; 63pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.34e-159
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene therapy (all claimed).
                                                                                02-FEB-2000; 2000US-0179801.
14-MAR-2000; 2000US-0189197.
                                     19-JAN-2001; 2001WO-US00020.
                                                                                                                                                  (ELIL ) LILLY & CO ELI.
                                                                                                                                                                                                 Jones BE;
                                                                                                                                                                                                                                          WPI; 2001-496919/54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 419 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity:
                                                                                                                                                                                                                                                                 N-PSDB; AAH26361.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
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09-AUG-2001.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note= "activation peptide; removal activates the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "cleavage makes a 2-chain inactive
precursor (155-amino acid light chain
attached via a disulfide bond to a
262-amino acid heavy chain)"
                                                                                                                                                                                                                                                                                                                                             myocardiai infarction, vascular occlusive disorder;
hypercoaqulation, sepsis, protein C deficiency, occlusion;
thromboembolism; stenosis; antibacterial; immunosuppressive;
thrombolytic; cardiant; antianginal; anticoagulant; therapy.
                                                                                                                                                                                                                                                                                                                     Protein C; human; coronary syndrome; thrombosis; angina;
         1201 GACTGGATCCATGGGCACATCAGAGACCAAGGAAGCCCCCCAGAAG 1245
                              'note= "thrombin cleavage site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'note= "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'note= "gamma-carboxylated"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'note= "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'note= "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
1..45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'note- "Gla domain"
                                                                                                                                         AAB82673 standard; Protein; 419 AA.
                                                                                                                                                                                                                                     15-OCT-2001 (first entry)
                                                                                                                                                                                                                                                                                  Wild-type human protein C.
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Disulfide-bond
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301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGGCTGTAGCTGT 360
                                                                      GCGCCTGGCTACAAGCTGGGGGACGACTCCTGCAGTGTCACCCCCCAGTGAAGTTCCCT 420
                                                                                                                                        421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
                                                                                                                                                   481 GACCAAGAAGACCAAGTAGATCCGCGCCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                                                                                                                                                                          61 SerLeuCysCysGlyHisGlyThrCysIleAspGlyIleGlySerPheSerCysAspCys 80
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The present invention relates to a human protein C derivative. The protein is useful for treating vascular occlusive disorders.

Protein is useful for treating vascular occlusive disorders.

Coagulation, purpura fulminans, major tramma, major surgery, burns, cault respiratory distress syndrome, transplantation, deep vein thrombosis, heparin-induced thrombosytopenia, sickle cell disease, thalassemia, viral hemorrhagic fever, thrombotic thrombosytopenic thromboty to unstable and acute coronary syndromes such as myocardial infarction, unstable angina, and stroke. Protein C derivatives with inactivation by serpins when compared to wild-type activated human inactivation by serpins when compared to wild-type activated human creduce either less frequent administration and/or and hood and hence require either less frequent administration and/or saller dosage
                                                                                                                                                                                                                                                                                                                                                                                                      Protein C derivatives, useful for treating vascular occlusive disorder, hypercoagulable state, thrombotic disorder and disease states predisposing thrombosis, comprises specific amino acid substitutions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 AICTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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                                                                                              Protein C; human; vascular occlusive; burn; transplantation; deep vein thrombosis; sickle cell; thalassemia; thrombotic disorders; myocardial infarction; angina; stroke.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1; Page 42-44; 57pp; English.
                                                                      Human protein C derivative 1.
                                                                                                                                                                                                                                             13-APR-2000; 2000WO-US08722.
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                                                                                                                                                                                     WO200066754-A1.
                                                                                                                                                            Homo sapiens.
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                                          26-FEB-2001
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                AAB36894;
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841 AGCGGCCTTGCAGAGCGCGGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
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                                                                                                                                                                                                               GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATC 720
                                                                                                                                                                              541 AGCCCCTGGCAGGTGGTCCTGCACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                         GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                      601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
                                                                                                                                                                             1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGT 1080
                                                                                                                                                                                                                                             1081 GGGGGCCCATGGTCGCCTCCTTCCACGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                                               961 ATCAAGAITCCCGTGGTCCCGCACAATGAGTGCAGGGGGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                                381 GlyGluGlyCysGlyLeuLeuHisAsnTyrGlyValTyrThrLysValSerArgTyrLeu 400
                                                                                                                                901 GGCTACCACAGAGCAGCAGAGAAGGAGGCCAAGAAAACCGCACCTTCGTCCTCAACTTC 960
                                                                1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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The invention relates to a conjugate (I) comprising at least one non-compropertied moiety (II) (e.g. an N-glycosyl group) covalently attached to polypeptide moiety (II) (e.g. an N-glycosyl group) covalently attached to a protein C polypeptide comprising an amino acid sequence which differs from that of a parent protein C polypeptide (III) in at least one converse and or at least one removed amino acid residue comprising an introduced and/or at least one removed amino acid residue comprising a cate). Also included are (1) a variant (IV) of (III) comprising a site). Also included are (1) a variant (IV) of (III) comprising a cubstitution in a position (P) where (P) is an amino acid with at least 25% of its side group exposed to the surface, with the proviso the substitution is not Thr245Ser/Ala/His/Lys/Arg/Asn/Asp/Glu/Gly/Gln or Phe316Ser/Ala/Thr/Cry 71302Ser/Ala/Thr/His/Lys/Arg/Asn/Asp/Glu/Gly/Gln or Phe316Ser/Ala/Thr/Cry 71302Ser/Ala/Thr/His/Lys/Arg/Asn/Asp/Glu/Gly/Gln (2) a nucleotide sequence (V) encoding His/Lys/Arg/Asn/Asp/Glu/Gly/Gln; (2) a nucleotide sequence (V) encoding (IV); (3) an expression vector (VI) comprising (V) or (VI); (5) increasing (W); the functional in vivo half-comprising (V) or (VI); (5) increasing (M2) the functional in vivo half-life or the serum half-life of a parent protein C polypeptide.

The conjugates, variants and protein C proteins are useful as medicaments, and in the manufacture of medicaments for the treatment (and medicaments, and in the manufacture of medicaments for the treatment companies (C) thrombosis, disseminated intravascular coagulation (DIC), sepsis, septic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel conjugate useful for treating or preventing septic shock, stroke and myocardial infarction, comprises non-polypeptide group covalently attached to protein C polypeptide comprising an attachment group
                                                                                                                                                                                     Human; Protein C; N-glycosylation; APC; activated protein C; zymogen; serum half-life; chromosome 2q13-q14; stroke; myocardlal infarction; after venous thrombosis; disseminated intravascular coagulation; DIC; sepsis; septic shock; embolism; pulmonary embolism; burn; pregnancy; bone marrow transplantation; major surgery; trauma; ARDS; coagulant; adult respiratory distress syndrome; alpha-1 antitrypsin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            158..169
/label= Activation_peptide
158..419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Andersen KV, Pedersen AH, Freskgaard PO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /label= Lys_Arg_dipeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 2; Page 79-81; 92pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /label= Heavy_chain
                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                    /label = Light_chain
                             AAU99002 standard; Protein; 419 AA.
                                                                                                                                                            Human Protein C zymogen protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (MAXY-) MAXYGEN APS.
(MAXY-) MAXYGEN HOLDINGS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-OCT-2000; 2000DK-0001560.
18-OCT-2000; 2000US-242268P.
21-JUN-2001; 2001DK-0000970.
21-JUN-2001; 2001US-300154P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-OCT-2001; 2001WO-DK00679.
                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                          .157
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                                                                                                                                                                                                                                                                                                                                                          Homo sapiens.
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                                                                                                                           23-AUG-2002
                                                                                AAU99002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Peptide
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421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACACAGAA 480

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361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT

GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGT 360 101 AspAsnGlyGlyCysThrHisTyrCysLeuGluGluValGlyTrpArgArgCysSerCys 120

CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300

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181 AGCCTGTGCGGGGGGCACGGCACGTGCATCGGCATCGGCAGCTTCAGCTGCGACTGC 240

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shock, emboli e.g. pulmonary emboli, transplantation such as bone marrow transplantation, burns, pregnancy, major surgery/trauma or adult crespiratory distress syndrome (ARDS). The variant protein C has an increased resistance to activation by e.g. human plasma and alpha-1 correased serum half-life, increased resistant to inhibitors, reduced increased serum half-life, increased resistant to inhibitors, reduced the conjugate offers a number of advantages over the currently available. The conjugate offers a number of advantages over the currently available administration of less protein, and fewer side effects. Moreover, a choiced anticoagulant activity is beneficial to reduce the risk of administration maintaining the antinflammatory activity of ARC (activated protein C) conjugates. This must be especially important when located on chromosome 2413-44. The present sequence represents zymogen protein C upon which the variants of the invention were based.
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419 AA; Sequence

1111	Scores: imilarity: l Similarity: ch:	63-153-1 (1-1245) x AAU99002 (1-419)	1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCGAGCG	ATCTGTGACTTCGAGGCCGAAGGAAATTTTCCAAAATGTGGATGACACACAC		TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTTGCCTTGGAGCACCGTGCGCC 1			CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCAGGTGAGCTTCCTCAATTGCTCGC	1 ArgSerGlyTrpGluGlyArgPheCysGlnArgGluValSerPheLeuAsnCysSerLeu	GACAACGCCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGGCGCTGTAGCTGT	AspAsnGlyGlyCysThrHisTyrCysLeuGluGluGluValGlyTrpArgArgCysSerCys	GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCT	AlabroGlyTyrLysLeuGlyAspAspLeuLeuGlnCysHisProAlaVallysPhebro	TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGAAGCGCAGTCAACTGAAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGA		GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGAGGGGGGAAGAAGACGAGAGGGGGGAAGAAGAAG	AspGlnGluAspGlnValAspProArgLeulleAspGlyLySMetThrArgArdGlyAsp	AGCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGGCAGGAGCAGCTGGCAGAGAAGAAGAAGCTGGCAAAGAAAG	SerProTrpGlnValValLeuLeuAspSerLysLysLeuAlaCysGlyAlaValLeu	ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGAGAAGAAGAAAAAAAA		
	Scor	-153			Ilecy	TGGTC TrpSe	AGCCI	Serre	CGCAG	Argse	GACAA	Aspasi	GCGCC	AlaPr	TGTGGG	CysGly	GACCAA	AspGlr	AGCCCC	SerPro	ATCCAC	- -	110110
•	Alignment Pred. No. Score: Percent S Best Loca Query Mate	-76	т п	61	21	121	181	61	241	81	301	101	361	121	421	141	481	161	541	181	601	201	
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961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
661 GTCAGGCTTGGAGATATGACCTGCGCCGCTGGGAGAGTGGGAGCTGGACCTGGACATC 720
         721 AAGGAGGICTICGICCACCCCAACTACAGCAAGAGCACCACCGACAAIGACAICGCACIG 780
                                                   781 CTGCACCTGGCCCAGCCGCCACCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGAC 840
                                                                                                                                                                                                                                             1021 GAGAACAIGCIGIGIGCGGGCAICCICGGGGACCGGCAGGAIGCCIGCGAGGGCGACAGI 1080
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                                                                                           841 AGCGGCCTTGCAGAGGGGGAGCTCAATCAGGCGGGCCAGGAGCCCTCGTGACGGGCTGG 900
                                                                                                                                901 GGCTACCACAGCAGCGAGAGAAGGAGGCCAAGAAAACGGACCTTCGTCCTCAACTTC 960
                                                                                                                                                                         341 GluasnMetLeuCysAlaGlyIleLeuGlyAspargGlnAspAlaCysGluGlyAspSer 360
                                                                                                                                                                                                                                                                                                 The human protein C is expressed in large amts. using plasmid pPC 1 in E.coli K12/Om 225 (FERM P-9297).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence of human protein C.
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N-PSDB; AAN81408.
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                                                                                                                                                                                                                                                                                                                Human protein C.
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                                                                                                                                                                       62 IleCysaspPheGluGluAlaLysGluIlePheGlnAsnValAspAspThrLeuAlaPhe 81
                                                                                                                              42 AlaAsnSerPheLeuGluGluLeuArgHisSerSerLeuGluArgGluCys1leGluGlu 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    202 AspGlnGluAspGlnValAspProArgLeuIleAspGlyLysMetThrArgArgGlyAsp
                                                                                                                   1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG
                                               Conservative:
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1141 GGTGAGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This polypeptide comprises human protein C. A claimed method for producing recombinant human protein C in the milk of a transgenic animal involves: (a) providing a DNA construct comprising DNA encoding a serretion signal and a protein C propeptide, operably linked to DNA encoding two-chain cleavage site-modified protein C, the 2 DNA sequences being linked to elements required for protein C expression in a mammary gland of a host female animal; and (b)
                                                                                         961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                                                                                                                                                                        901 GGCTACCACAGCAGCCGAGAGGAGGGCCAAGAGAAACGGCACCTTCGTCCTCAACTTC 960
                           Protein C; transgenic animal; sheep; rabbit; cattle; goat; milk;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Production of protein C in transgenic animal - useful for high quantity protein C production with therapeutic value
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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/note= "two-chain cleavage site"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    blood clotting; anticoagulant; human.
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using the DNA construct to breed a transgenic animal (esp. sheep, rabbit, cattle, goat) that produces protein C in its milk, at least 90% of the protein C being in the two-chain form. Modification of the protein C two-chain cleavage site (see AAW25085) to two-chain form.
                                                                                                                                                                                                                                                     61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                121 IGGICCAAGCACGICGACGGIGACCAGIGCITGGICTIGCCCTIGGAGCACCCGIGCGCC 180
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Conservative:
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The claimed sequence AAN60001 has "RIN-RW" attached to its 5' end wherein: R= AAN60002 or AAN60003, and RI= AAN60004 or AAN60005; and M and
                                                                                                            961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                       1021 GAGAACATGCTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGT 1080
                                                                                                                                                                                                    1081 GGGGGCCCATGGTCGCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                                                                                                                                                                               1141 GGTGAGGCTGTGGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
                      841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                    303 LeuHisLeuAlaGlnProAlaThrLeuSerGlnThrIleValProIleCysLeuProAsp 322
                                                                  901 GGCTACCACAGCAGCGGAGAGAAGGAGGCCAAGAAACCGCACCTTCGTCCTCAACTTC 960
                                                                                                                          403 GlyGlyProMetValAlaSerPheHisGlyThrTrpPheLeuValGlyLeuValSerTrp 422
                                                                                                                                                                                                                                                           Prodn. of polypeptide having human protein C activity - is brecombinant DNA procedures for prod. useful against vascular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Beckmann RJ, Jaskunas SR, Lai MHT, Little SP; Santerre RF;
                                                                                                                                                                                                                                                                                            1201 GACTGGATCCATGGGCACATCAGAGGAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                        Sequence of polypeptide with human protein C activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Vascular disorder therapy; protein c deficiency.
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/note= "encoded by AAN60001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1...s./note='"encoded by AAN60004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure; Pages 10-12; 121pp; English.
                                                                                                                                                                                                                                                                                                                                                            AAP60001 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86EP-0300823.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        85us-0699967
                                                                                                                                                                                                                                                                                                                                                                                                       25-JUL-1991 (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               06-FEB-1986;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-AUG-1986.
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323 SerGlyLeuAlaGluArgGluLeuAsnGlnAlaGlyGlnGluThrLeuValThrGlyTrp 342
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                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                              AAP70855 standard; Protein; 461 AA.
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                                                                                                                                                                                                                                                                                                                     10-MAY-1991 (first entry)
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162..175
92..175
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GACCAAGAAGACCAAGIAGAICCGCGCTCAITGAIGGGAAGAIGACCAGGCGGGAGAC 540
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421 TGTGGGAGGCCCTGGAAGGGGGATGGAGAAGGAGCGCAGTCACCTGAAACGAGACAAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                             GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGGCTGGCGGCGCTGTAGCTGT 360
                                                                                                                                                                                                                                                                                                                                                                     CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                            AGCCTGTGCGGCTGCGGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                        N= 0 or 1; provided that when M=0, N=0; and that when R= AAN60002, R1= AAN60004; and that when R= AAN60003, R1= AAN60005.
                                                                                                                                                                                                 61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                        121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                             1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCGGAGGGGGGAGTGCATAGAGGAG 60
                                                                                                                                                                       Conservative:
                                                                                                          Mismatches:
                                                                                      Matches:
                                                                                                                  Indels:
                                                                             Length:
                                                                                                                                             US-09-763-153-1 (1-1245) x AAP60001 (1-461)
                                                                               1.37e-159
                                                                                     2298.00
100.00%
100.00%
98.33%
                                                 461 AA;
                                                                                                          Best Local Similarity:
Query Match:
                                                                                                   Percent Similarity:
                                                                       Alignment Scores:
                                                    Seguence
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1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCGGCTACCTC 1200
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                                                         961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                              901 GGCTACCACAGCAGCAGGAGAAGAGGGCCAAGAAACCGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               note= "links together the two processed chains"
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              59..64
60..63
/label= gamma-carboxyglutamic acid (Gla) domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note= "in heavy chain; converts to activated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        human Protein C; anti-coagulant; thrombosis; serine protease.
                                                                                                                                                                                                                                                                                                           1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                                             growth factor domains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /label = prepro leader peptide
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/note= "apparent processing site for connecting

dipeptide"

dipeptide

199..200

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Human protein C or activated protein C - prepd. using expression vector capable of integration in mammalian host cell DNA
                                                                                                                               Murray MJ, Berkner KL, Foster DC, Davie
                                                                                                                                                                                              Claim 4; Fig 4; 52pp; English.
                                                                                85US-0749600.
85US-0766109.
                                                                 86EP-0304970.
                                                                                                                (UNIW ) UNIV OF WASHINGTON.
                                                                                                        (ZYMO-) ZYMOGENETICS INC.
                                                                                                                                              WPI; 1987-081505/12.
                                                                                                                                                       N-PSDB; AAN70102
Cleavage-site
                                                               26-JUN-1986;
                                                                                       15-AUG-1985;
                                               25-MAR-1987
                              EP215548-A.
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Recombinantly produced protein C can be used to treat thrombotic disorders such as venous thrombosis as it has anti-coagulant properties. The protein sequence is thought to yield two peptide chains; the first contains the Gla domain and growth factor domains and the second (the activation peptide) contains the catalytic

461 AA; Sequence

461 415 0 0 0 Matches: Conservative: Mismatches: Length: Indels: 1.37e-159 2298.00 100.00% 100.00% 98.33% Best Local Similarity: Percent Similarity: Alignment Scores: Query Match: DB: Score:

US-09-763-153-1 (1-1245) x AAP70855 (1-461)

61 AICTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120 121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180 181 AGCCTGTGCGGGGACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240 241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300 1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACCAGCAGCCTGGAGCGGGAGTGCATAGAGGAG 60 361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420 301 δ g P ŏ ò g ò g q ŏ

EP323149-A.

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421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGGAGCGCAGTCACCTGAAACGAGACACAGAA 480
             GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGGGAGAC 540
                                                      541 AGCCCTGGCAGGTGCTGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                                                                                              961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGGGGGGTCATGAGCAACATGGTGTCT 1020
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                                                                                                                                                                      661 GTCAGGCTTGGAGATATGACCTGCGCGCTGGGAGAGTGGGAGCTGGACCTGGACATC 720
                                                                                                                                                                                   AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAACACCACCGACAATGACATGGCACTG 780
                                                                                                                                                                                                                           781 CIGCACCIGGCCCAGCCGCCACCCICTCGCAGACCATAGIGCCCATGIGCCTCCCGGAC 840
                                                                                                                                                                                                                                                                      841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
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                                                                                                                                                                                                                                                                                                                                             GGCTACCACAGCGAGGAGAGAGAGAGAGAAAACGGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                                                                                                                                                                         423 GlyGluGlyCysGlyLeuLeuHisAsnTyrGlyValTyrThrLysValSerArgTyrEeu 442
                                                                                                                             601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human protein C; zymogen form; activated C protein;
human liver mRNA; signal peptide; propeptide; antithrombotic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Zymogen form of human protein C.
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New DNA encoding zymogen form of human protein C - and its activated deriv., useful as eg antithrombotic agents more sensitive to thrombin
                                                                                           Disclosure; page 4 - 7; 65pp; English.
                                    (ELIL ) ELI LILLY AND CO.
                                                         1989-194452/27.
                                                             N-PSDB; AAN90187
              22-DEC-1988;
                         28-DEC-1987;
     05-JUL-1989.
                                                                                  activation.
                                               Bang NU,
```

Grinnell BW, Yan SB;

Ehrlich HJ,

88EP-0312201. 87US-0138009. This is the protein sequence of nascent human protein C encoded by the DNA of AAN90187, which is derived from cDNA clones prepd. from human liver mRNA. It comprises the following regions: residues 1-42 are the signal peptide and propeptide of human protein C, important for directing secretion and propeptide of human protein C, important for directing secretion and protein C, insolutes 43-197, once post-cranslationally modified, constitute the light chain of both two-chain zymogen and activated forms of protein C; residues the two-chain zymogen and activated forms of protein C; residues 50 be removed (on basis of homology with 50 bovine protein C) probably by a 2 step process comprising a bovine protein C) probably by a 2 step process comprising a first cleavage (either between residues 197-8 or 199-200), first cleavage (either between residues 197-8 or 199-200), followed by carboxypeptidase or aninopeptidase action, to form 2 followed by carboxypeptidase or aninopeptidase action, to form 2 chain protein C; residues 200-211 constitute the activation activated heavy chain of the 2 chain form of protein C; zymogen, once 3 and the heavy chain of the 2 chain form of protein C zymogen, once 3 protein C; modified, and artivated heavy chain of active protein C; pr Protein C zymogen and activated protein C are regulators of haemostasis, differing from native protein C by increased sensitivity to activation by thrombin and thrombin, thrombomodulin even in presence of Ca ions) and longer in vivo half life. They are useful as on-demand antithrombotic agents, (replacements for heparin and hydroxycoumarins) and for treatment of hereditary heparin and hydroxycoumarins protein C deficiency states.

461 AA; Sednence

181 AGCCIGIGCIGCGGCACGGCACGIGCATCGACGGCAICGGCAGCIICAGCIGCGACIGC 240 121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180 61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120 1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG 60 461 415 0 0 0 0 Conservative: Mismatches: Matches: Length: Indels: US-09-763-153-1 (1-1245) x AAP90401 (1-461) 1.37e-159 2298.00 100.00% 100.00% 98.33% cent Similarity: t Local Similarity: bry Match: Alignment Scores: Pred. No.: g ò g ò g ò

AAR13074 standard; Protein; 461 AA.

AAR13074

1081 GGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCCTGGTGACTGG 1140 1141 GGTGAGGGCTGTTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200 961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020 GAGAACATGCTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGT 1080 901 GGCTACCACAGCAGCGAGAGAAGAGGAGGCCAAGAAAACGGCACCTTGGTCCTCAACTTC 960 721 AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780 840 322 900 342 009 9 720 540 421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480 241 CGCAGCGGCTGGBAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300 841 AGCGGCCTTGCAGAGCGCGGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 781 CIGCACCIGGCCCAGCCCGCCACCTCGCAGACCATAGIGCCCATCIGCCTCCCGGAC 661 GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATC 601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 541 AGCCCCTGGCAGGTGGTCCTGCAGACTCAAAGAAGAAGCTGGCCTGCGGGGAGTGCTC 481 GACCAAGAACAAGTAGATCCGCGCTCATTGATGGGAAGATGACCAGGCGGGGGAGAC 361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 301 GACAACGGCGGCTGCACCCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGT 1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245 ò g δλ q οy g δy g ğ g δy αd g g ŏ δ δ g δŏ g οχ g 셤 ò g Óλ g δ

AAR13074;

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Recombinant protein C with truncated light chain - for use as an
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                                                                                                                                                                                                                 label≈ gamma carboxyglutamic acid
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                                                                                                                                 /label= proteolytic cleavage
                                                                                                                                                  /label= proteolytic cleavage
201..211
                                                                                                                                                                                                                                                                                                                                                                  label = N-glycosylation site
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                                                                                                                                                                                                                                                                                                                                                                                                                /label= N-glycosylation site
                                                                                                                                                                 /label= activation peptide
                                                                                                  'label= pre-pro peptide
                                                                                  Location/Qualifiers
                                                                                                                                                                                 /label= heavy chain
                                                                                                                   label= light chain
                                                                                                                                                                                                  /label= Gla domain
                                               Anticoagulant, fibrinolysis.
                  (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ZYMO-) ZYMOGENETICS INC.
                                Protein C precursor.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1991-222903/30.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB; AAQ12649
                                                                                                                        Cleavage-site
                                                                                                                                       Cleavage-site
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               02-OCT-1991
                                                                Homo sapiens
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                                                                                        Peptide
                                                                                                                                                        Peptide
                                                                                                         Region
                                                                                                                                                                        Region
                                                                                                                                                                                        Domain
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Disclosure; Fig 1; 60pp; English.

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The sequence was deduced from a clone isolated from a cDNA library prepd. from mRNA from Hep G2 cells. It is a protein C precursor, including light and heavy chains, which is cleaved to produce activated protein C (see feature table). The DNA encoding the sequence can be manipulated by genetic engineering techniques to serpress a protein comprising (when activated) a heavy chain and a truncated light chain comprising residues 1-149, 1-150, 1-151 or 1-15.
                                                                                                                                  Pre-pro = pre-pro peptide of protein C with all/part replaced by the corresponding peptide of either protein S, factors VII, IX or X,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 AGCCIGIGCIGCGGCACGGCACGIGCATCGACGGCATCGGCAGCTTCAGCIGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301 GACAACGGCGGCTGCCACGCATTACTGCCTAGAGGAGGTGGGGCTGGCGGCGCTGTAGCTGT 360
                                                                                                                                                                                                                                                                                                                                                                                                                                           1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGGCAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACAAGAA 480
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                541 AGCCCCTGGCAGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 or prothrombin; L = AAs 1-149, 150, 151 or 152 of light chain; L = AAs 1-149, 150, 151 or 152 of light chain; H = heavy chain.
Cells transformed with expression vectors contg. the modified DNA sequences produce the new proteins which can be used to regulate anticoagulant and fibrinolytic systems.
See also W09112320 (AAR13074).
                                                                                                                                                                                                                                                                                                                                461
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                                                                                                                                                                                                                                                                                                                                  Length:
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Best Local Similarity:
                                                                                                                                                                                                                                                                                                        Alignment Scores:
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(ZYMO-) ZYMOGENETICS INC
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    021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGACAGT 1080
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                                                                                                                                                                                                                                                                                          1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
                                                                                                                                                                                             961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                                                                   901 GGCTACCACAGCAGCAGAGAAGAAGGAGGCCAAGAAAACCGCACCTTCGTCCTCAACTTC 960
                                                                  721 AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780
                                                                                                 781 CIGCACCIGGCCCAGCCGCCACCTCTCGCAGACCAIAGIGCCCAICIGCCTCCCGGAC 840
                                                                                                          841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                                                                                                                        661 GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGAGAAGTGGGAGCTGGACCTGGACATC 720
                                            243 IleHisproSerTrpValLeuThrAlaAlaHisCysMetAspGluSerLysLysLeuLeu 262
                                                                                                                                                                                                                                                                                                                                                                                                                                       Phopholipid; binding protein; lipocortin; domain; vitamin K; PBP;
      601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
                                                                                                                                                                                                                                                                                                                           1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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/label= mat_protein
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                           AAR13081 standard; Protein; 461 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens
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481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        223 SerProTrpGlnValValLeuLeuAspSerLysLysLysLeuAlaCysGlyAlaValLeu 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301 GACAACGGGGGCTGCACGCATACTGCCTAGAGGAGGTGGGCTGGGGGCGCGCTGTAGCTGT 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      163 AlaProGlyTyrLysLeuGlyAspAspLeuLeuGlnCysHisProAlaValLysPhePro 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This sequence, or a fragment of it, is used in the construction of hybrid phospholipid-binding proteins (PBP) having the same biological activity as human protein C or human activated protein C. The hybrid sequence would comprise at least one lipocortin phopholipid binding domain (PBD), e.g. of PAP-I, joined to a gla-domainless protein C or activated protein C. See AAQ12680-81 for such examples. See also AAQ12678-81.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Recombinant prodn. of hybrid phospholipid-binding proteins comprising lipocortin phospholipid-binding domain and
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Matches:
Conservative:
Mismatches:
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                                                                                                                                                  Disclosure; Fig 2; 57pp; English.
                                                                                                                                                                                                                                                                                                                                                                                  1.37e-159
                                                                                                               vitamin K-dependent protein
                                                                                                                                                                                                                                                                                                                                                                                                  2298.00
100.00%
100.00%
98.33%
                              WPI; 1991-222905/30.
                                                                                                                                                                                                                                                                                                                                  Sequence 461 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity:
                                              N-PSDB; AAQ12678
                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
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Foster DC;
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601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
        661 GTCAGGCTTGGAGATGACCTGCGGCGCTGGGAGAAGTGGGAGGTGGACCTGGACATC 720
                                        721 AAGGAGGICITCGICCACCCAACTACAGCAAGAGCACCACCGACAATGACATGGCACTG 780
                                                                                                                                                                                                961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGCGAGGCGACAGT 1080
                                                                                                781 CTGCACCTGGCCCAGCCGCCACCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGAC 840
                                                                                                         841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                                                                                                                        901 GGCTACCACAGCAGCCGAGAAGGAGGCCAAGAAACCGCACCTTCGTCCTCAACTTC 960
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                                                                                                                                                                                                                                                                                                                                          /note= "Light chain, see comment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /label= signal peptide
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                                                                                                                                                                                                                                                                                                                                                                                                                                  Human protein C.
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181 AGCCTGTGCTGCGGGACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCTGGAGCGGGAGTGCATAGAGGAG 60
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The amino acid sequence codes for human protein C (HPC). The cartivated protein can comprise one of 3 different truncated light chains, Ala(1) to Lys(150),Lys(151) or Arg(152). The activated HPC with a truncated light chain is more stable during storage. It can be administered for prophylactic and/or therapeutic treatments of disease states or injuries to enhance the patient's own anti-coagulative or fibrinolytic capabilities. See also W09109951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGGAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421 TGTGGGAGGCCCTGGAAGGGGATGGAGAAGGGGCAGTCACCTGAAAGGAGACAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Activated human protein C with truncated light chain - used in therapy and prophylaxis to enhance anticoagulant and fibrinolytic capabilities.
                                                                                                                                                                                                                                                                                                                                                                                  461
415
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                                                                                                            Miyagi F, Sumi Y, Wakabayashi K, Foster DC;
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Mismatches:
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                                                                                                                                                                                                               Claim 1; Fig 1; 49pp; English.
                                    91WO-US00912.
                                                           90US-0478084
                                                                                                                                                                                                                                                                                                                                                                           1.37e-159
2298.00
100.00%
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                                                                             (ZYMO-) ZYMOGENETICS INC.
                                                                                                                                  WPI; 1991-267132/36.
N-PSDB; AAQ13357.
                                                                                          (TEIJ ) TEIJIN LID.
                                                                                                                                                                                                                                                                                                                                         461 AA;
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Query Match:
                                08-FEB-1991;
                                                       09-FEB-1990;
                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
             22-AUG-1991,
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1141 GGTGAGGGTTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
                                                                                                                                                                                                                                                      1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGACAGT 1080
                                                                                                                                                                                                                                                                                 1081 GGGGGGCCCATGGTCGCCTCCTTCCACGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                                                                                                                                                           961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                                                                                    901 GGCTACCACAGCAGCGAGAGAAGGAGGCCAAGAAAACCGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                       841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                                                                                                                         CTGCACCTGGCCCAGCCGCCACCCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGAC 840
                                                                                                                                                 721 AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780
                                                                                                                     601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
                                                              GTCAGGCTTGGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATC 720
                                                                                          481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
      Protein C; heavy chain; light chain; anticlotting; fibrinolysis;
                           1201 GACTGGATCCATGGCCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                                                                194..197
/label= C-terminal
/note= "light chain"
193..197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                     AAR34295 standard; protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                  promoter; anticoagulant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                   10-AUG-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                Protein C.
                                                                                                                                                                                                                                                                                                                                                                                                      AAR34295;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Peptide
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241 CGCAGCGGTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                             A human protein C or an activated protein C has a H chain contg. one of the residues 239-246 (= residues 450-457 in the sequence below) of the residues at C terminal, or in the H chain of natural activated protein C as the C-terminal, or has a L chain contg. one of the residues 141-155 (= residues 141-155 in the sequence below), pref. residues 149-155 (= residues 149-155 in the sequence below) in the L chain of natural activated protein C as the C-terminal. The human protein C or the activated protein C can be used as an anticlotting agent or a fibrinolysis promoter.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 AGCCTGTGCTGCGGGCACGGCACGTGGATCGACGGCATCGGCAGCTTCAGCTGCGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG
                                                                                                                                                                                                                                                                                                                                                         Human protein C and activated protein C with short H chains useful as anti-clotting agents and fibrinolysis promoters
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    461
415
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Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-763-153-1 (1-1245) x AAR34295 (1-461)
                                                                                                                                                 /note= "heavy chain"
                                                                                                    /note= "heavy chain"
/label= C-terminal
/note= "light chain"
                                          /label= N-terminal
/note= "heavy chain"
                                                                                                                                    C-terminal
                                                                                         C-terminal
                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Fig 1; 8pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.37e-159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2298.00
100.00%
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98.33%
                                                                                                                                                                                                                                                                           91JP-0228687.
                                                                                                                                                                                                                                            91JP-0228687
                                                                                                                      451..461
                                                                          458..461
                                211
                                                                                                                                      /label=
                                                                                            /label=
                                                                                                                                                                                                                                                                                                                                       WPI; 1993-128866/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  461 AA;
                                                                                                                                                                                                                                                                                                          (TEIJ ) TEIJIN LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                       JP05064588-A.
                                                                                                                                                                                                                                                 14-AUG-1991;
                                                                                                                                                                                                                  19-MAR-1993.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
                                                                                                                              Peptide
                                                                               Peptide
                                   Peptide
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361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCGCAGTGAAGTTCCCT 420
           421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGCGCAGTCACCTGAAACGAGACAGAA 480
                                                481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                                                                                                       541 AGCCCCTGGCAGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                                                                                                                                                            601 ATCCACCCCTCGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
                                                                                                                                                                                       GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAACTTGGACCTGGACATC 720
                                                                                                                                                                                                721 AAGGAGGICTICGICCACCCCAACIACAGCAAGAACACCACGACAATGACAICGCACTG 780
                                                                                                                                                                                                                                                                                                                                                                               961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
                                                                                                                                                                                                                                                                 781 CTGCACCTGGCCCAGCCGCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGAC 840
                                                                                                                                                                                                                                                                                                                                                                                                                   1021 GAGAACATGCTGTGCGGGGATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGAGAT 1080
                                                                                                                                                                                                                                       841 AGCGGCCTTCCAAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1081 GGGGGCCCATGGTCGCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                                                                                                                                                                                                                                                 1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCGGCTACCTC 1200
                                                                                                                                                                                                                                                                                                                                           901 GGCTACCACAGCAGCCGAGAGGAGGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                                                                                                                                                                        Activated protein C; serine protease; thrombosis; thrombolytic; fibrinolytic; antithrombotic; blood clotting; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW02600 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               05-NOV-1996 (first entry)
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/note= "cleavage site between connecting dipeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "residue 200 is replaced by Ala, Ser,
Thr or Gly in constructs of the
invention"
                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "residue 196 is replaced by Lys, Arg
                                                                                                          'note= "forms disulphide bond with Cyslll"
                                                                                                                                              /note= "forms disulphide bond with Cys101"
106
                                                                                                                                                                   /note= "forms disulphide bond with Cys120"
                                                                                                                                                                                                         /note= "forms disulphide bond with Cys106"
                                                                                                                                                                                                                            /note= "forms disulphide bond with Cys131"
                                                                                                                                                                                                                                                 /note= "forms disulphide bond with Cys122"
                                                                                                                            note= "fors disulphide bond with Cys105"
                                                                                                                                                                                                                                                                                       'note= "forms disulphide bond with Cys151"
                                                                                                                                                                                      /note= "forms disulphide bond with Cys92"
                                                                                                                                                                                                                                                                                                         note= "forms disulphide bond with Cys160"
                                                                                                                                                                                                                                                                                                                              /note= "forms disulphide bond with Cys140"
                                                                                                                                                                                                                                                                                                                                                note= "forms disulphide bond with Cys147"
                                                                                                                                                                                                                                                                                                                                                                                                         /note= "forms disulphide bond with Cys319"
196
                                                                                                                                                                                                                                                                                                                                                                                      /note= "forms disulphide bond with Cys162"
                                                                                                                                                                                                                                                                                                                                                                    note= "forms disuphide bond with Cys175"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              note= "forms disulphide bond with Cys254"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 note= "forms disulphide bond with Cys238"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "forms disulphide bond with Cys183"
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "residues 198-199 are replaced by Lys-Lys or Arg-Arg in constructs of the invention"
                                                                                                                                                                                                                                                                    /label= N-glycosylation_site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     label= N-glycosylation_site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label= N-glycosylation_site 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /label= Activated_protein-C
                                                  /label= Pre-pro-peptide
                                                                     /label= Mat_protein
                                Location/Qualifiers
                                                                                        /label= GLA_domain
                                                                                                                                                                                                                                                                                                                                                                                                                                              Misc-difference 198..199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ..212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Misc-difference 200
                                                                                              Disulfide-bond
                                                                                                                  Disulfide-bond
                                                                                                                                     Disulfide-bond
                                                                                                                                                       Disulfide-bond
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                                                                                                                                                                                             Disulfide-bond
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           Homo sapiens.
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                                                                                                                                                                                                                                                        Modified-site
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                                       Peptide
                                                          Protein
                                                                             Domain
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                             Key
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Human protein C (AAM02600) is a zymogen of a serine protease that plays an important role in the regulation of blood coagulation and the generation of fibrinolytic activity in vivo. It is synthesized in the liver and processed to a 2-chain molecule, which is itself converted to activated protein C. Protein C activated protein C are useful in the treatment of thrombotic activated protein C are useful in the treatment of thrombotic activated protein C are useful in the protein C are useful in the treatment of thrombotic c, modified protein C are useful from Hep G2 cells. Variant protein C, modified to improve cleavage between the heavy and light chains of the circulating intermediate, can also be produced.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New DNA encoding modified forms of opt. activated protein C - and related transformed cells for prodn. of recombinant protein C for use e.g. as an anti-thrombotic agent
                                                                                                                          /note= "forms disulphide bond with Cys 398"
                                  /note= "forms disulphide bond with Cys387"
                                                                                               /note= "forms disulphide bond with Cys426"
                                                               /note= "forms disulphide bond with Cys373"
/label= N-glycosylation_site 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Example 1; Fig 2A-C; 34pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                 Foster DC, Murray MJ;
                                                                                                                                                                                                                                                                  85US-0749600.
86US-0924462.
87US-0130370.
                                                                                                                                                                                                                                                                                                           90US-0582131.
                                                                                                                                                                                                                                                                                                                                          94US-0225253
                                                                                                                                                                                                                                                                                                                           92US-0987532
                                                                                                                                                                                                                       85US-0749600
                                                                                                                                                                                                                                                       89US-0317205
                                                                                                                                                                                                                                                                                                                                                                        (ZYMO ) ZYMOGENETICS INC.
                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 1996-251006/25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 461 AA;
                                                                                          398
                                                                                                                                                                                                                                                                                                                                                                                                                                                 N-PSDB; AAT32795;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAT32796.
                                                                                                                       Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qnment Scores:
                                                            Disulfide-bond
                                                                                            Disulfide-bond
                                 Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                       Berkner KL,
                                                                                                                                                                                                                                                                                                                                             08-APR-1994;
                                                                                                                                                                                                                            27-JUN-1985;
                                                                                                                                                                                                                                                                                                                   10-SEP-1990;
                                                                                                                                                                     USS516650-A.
                                                                                                                                                                                                                                                         28-FEB-1989;
                                                                                                                                                                                                                                                                                     29-OCT-1986;
                                                                                                                                                                                                                                                                                                     08-DEC-1987
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                                                                                                                                                                                                14-MAY-1996
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Length:
Matches:
Conservative:
Mismatches:
                                           Indels:
                                                                        US-09-763-153-1 (1-1245) x AAW02600 (1-461)
  1.37e-159
           2298.00
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                                    Best Local Similarity:
                          ercent Similarity:
                                               Query Match:
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RESULT 16

1081 GGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGACTGG 1140 1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200 1021 GAGAACATGCTGTGTGGGGGATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGACAGT 1080 961 ATCAAGATTCCCGTGGTCCCGGCACAATGAGTGCAGGGGGGGTCATGAGCAACATGGTGTCT 1020 901 GGCTACCACAGCAGCCGAGAGAAGGAGGCCAAGAGAAACGGCACCTTCGTCCTCAACTTC 960 362 841 AGCGGCCTTGCAGAGCGCGAAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900 721 AAGGAGGICTICGTCCACCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780 781 CIGCACCIGGCCCAGCCGCCACCTCGCAGACCAIAGIGCCCATCIGCCICCCGGAC 840 601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660 541 AGCCCTGGCAGGGGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600 481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540 361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420 421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480 222 301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGGCTGGCGGCGCTGTAGCTGT 360 241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300 181 AGCCIGIGCIGCGGCACGGCACGIGCAICGACGGCAICGGCAGCIICAGCIGCGACIGC 240 1201 GACTEGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245 g QΥ g ò δŏ Ω g qq Ŏλ g δ Dp οy g В ò ö g δλ 원 δ g δ ŏ ò g g qq δ g δ d á

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AA232159 to AA232194 represent reference alleles for specifically claimed nucleic acid sequences from the present invention which comprise from 92 bylymorphic sites as given in a table in the specification, selected polymorphic sites incleotide polymorphisms in which the nucleotide at the reference allele. The nucleic acids, and primers and probes, are used to especially polymorphisms, which may predispose an individual to disease, especially a vascular disease. They can also be used in phenotype analysis. AAX49550 to AAX49573 represent the proteins which correspond to some of the reference alleles.
                                                                                                                Human; coding sequence polymorphism; vascular pathology gene;
polymorphic site; phenotype correlation; forensic; paternity testing;
medicine; genetic analysis; vascular disease.
                                                                                                                                                                                                                                                                                                                                                                                          Determination of polymorphisms in genes, especially those identifying
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 AICTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 GCCAACTCCTTCCTGGAGGAGCTCCGTCAGCAGCAGCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human lecithin cholesterol acyltransferase protein seguence.
                                                                                                                                                                                                                                                                                                                              Cargill M, Ireland JS, Rozen SG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches:
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            AAY49561 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Fig 24; 134pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                       predisposition to vascular disease
                                                                                                                                                                                                                                                 99WO-US06473
                                                                                                                                                                                                                                                                          98US-0054272.
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100.00%
98.33%
                                                              13-JAN-2000 (first entry)
                                                                                                                                                                                                                                                                                                                            Daley GQ,
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                                                                                                                                                                    Homo sapiens.
                                                                                                                                                                                           WO9950454-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
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                                                                                                                                                                                                                    07-0CT-1999.
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                                      AAY49561;
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AAY49561
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241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                          103 SerLeuCysCysGlyHisGlyThrCysIleAspGlyIleGlySerPheSerCysAspCys 122
                                                   361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCGGAGTGAAGTTCCCT 420
                                                                                               541 AGCCCCTGGCAGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                                                                                                                                                                                                        601 ATCCACCCTCGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
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(first entry)

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The invention relates to human protein C derivatives and nucleic acid molecules encoding such derivatives. These derivatives have increased anticoagulation activity, resistance to serpin inactivation and and configuration activity to thrombin activation compared to wild type increased sensitivity to thrombin activation compared to wild type protein C, and retains the biological activity of the wild type human protein C, and retains the biological activity of the wild type human c protein C. Protein C derivatives are useful in the manufacture of a medicament for the treatment of acute coronary syndromes e.g. myocardial infarction and unstable angina; and disease states predisposing to infarction and unstable angina; and disease states predisposing to infarction and unstable angina; orgalization (DIC), burns, transplantations, diseaminated intravascular coagulation (DIC), burns, transplantations, coameability increasing protein; transplantations, with backerial arterial states are activity increasing protein; thrombotic disorders in combination with a nati-platelet agent; protein C deficiency; acute arterial corpusation, thrombootism or stenosis in combination with a croparation with a corpusation or treating humans with genetically predisposed prothrombotic disorders for treating humans with genetically predisposed prothrombotic disorders corpusation with a present sequence is human wild type protein C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein C derivative for treating acute coronary syndromes, vascular occlusive disorders, thrombotic disorders and sepsis, comprises substitutions at specified amino acid positions
                                                                                                                                Human; protein C derivative; anticoagulation activity; thrombosis; serpin inactivation; acute coronary syndrome; myocardial infarction; vascular occlusive disorder; hypercoagulable state, angina; sepsis; disseminated intravascular coagulation; DIC; burn; transplantation; sickle cell disease; viral haemorrhagic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion; thromboembolism; prothrombotic disorder; gene therapy; thalassaemia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 44-46; 59pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               02-FEB-2001; 2001WO-US01221.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11-FEB-2000; 2000US-0181948.
14-MAR-2000; 2000US-0189199.
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                                                                                                        Human wild type protein C.
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                                                                                                                                                                                                                                                                                                                                      Homo sapiens.
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                                                            01-NOV-2001
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Jones BE;

461 415 0 0

Conservative: Mismatches: Length: Matches:

1.37e-159 2298.00 100.00% 100.00%

461 AA;

98.33%

Similarity:

Best Local Si Query Match:

Percent Similarity:

Alignment Scores:

43..461 /label= Mature_human_wild type_protein_C

/label- Signal_peptide

Location/Qualiflers

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1021 GAGAACAFGCTGFGTGCGGGCATCCTCGGGGACCGGCAGGAFGCCTGCGAGGGCGACAGT 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
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                                                                                                                                                                                                                                                                                                                                                                     481 GACCAAGAAGACCAAGTAGATCCGCGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                                                                                                                                421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480
                                                                                                                                                                                                                                                                                                                                              183 CysGlyArgProfrpLysArgMetGluLysLysArgSerHisLeuLysArgAspfhrGlu 202
                                                                                                                                                                                                     301 GACAACGGCGGCTGCACGCATACTGCCTAGAGGAGGTGGGGTGGGCGGCGCGTGTAGCTGT 360
                                                                                                                                                                                                                                                361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                          181 AGCCTGTGCTGCGGGACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                            241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                     121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                        1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCCAGCCTGGAGGGGGAGTGCATAGAGGAG
US-09-763-153-1 (1-1245) x AAE08626 (1-461)
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1081 GGGGGCCCCATGGTCGCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                 1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACGAAAGTCAGCCGCTACCTC 1200
/note= "activation peptide; removal activates the
                                                                                                                                                                                                                                    Protein C; human; coronary syndrome; thrombosis; angina; myocardial infarction; vascular occlusive disorder; thrombosmolation; sepsis; protein C deficiency; occlusion; thromboembolism; stenosis; antibacterial; immunosuppressive; thrombolytic; cardiant; antianginal; anticoagulant; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "cleavage makes a 2-chain inactive
Precursor (155-amino acid light chain
attached via a disulfide bond to a
262-amino acid heavy chain)"
                                                                                                      1201 GACTGGATCCATGGGCACATCAGAGGAAGGAAGCCCCCCAGAAG 1245
                                                                                                                 /note= "gamma-carboxylated"
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200..211
                                                                                                                                                                                                                                                                                                                                    label= Signal_peptide
                                                                                                                                                                                                                                                                                                                                               43..461
/label= Mature_protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2-chain zymogen"
                                                                                                                                                            AAB82674 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                           "Gla domain"
                                                                                                                                                                                                15-0CT-2001 (first entry)
                                                                                                                                                                                                                   Wild-type human protein C.
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The present sequence is that of human protein C prepro-polypeptide.

The invention relates to human protein C derivatives having at cheast 2 manno acid substitutions, and to recombinant DNA molecules encoding such derivatives. These derivatives have increased compared with wild-type human protein C but retain the biological activity of the wild-type human protein C but retain the biological activity of the wild-type protein. The amino acid substitutions are corpirity of the wild-type protein. The amino acid substitutions are copsitions 194, 195, 228, 249, 254, 302, or 316 of the mature protein C polypeptide substituted with Ser, Ala, Thr. His, Lys, Leu, Arg, C Asn, Asp, Glu, Gly or Gln (numbering relative to the protein C given in AAB2675-78. Also claimed are a vector comprising DNA cells and a method of producing the human protein C derivatives.

CC encoding the novel human protein C derivatives. Transformed host C syndromes and disease states predisposing to thrombosis (e.g. disorders and hypercoagulable states, sepsis (in combination with pathway inhibitor), thrombotic disorders (in combination with pathway inhibitor), thrombotic disorders (in combination with pathway inhibitor), thrombotic disorders (in combination with an occlusion, thrombombombolism, or stenosis in coronary, cerebral or genetically predisposed prothrombotic disorders may be treated by
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Novel human protein C derivative for treating, e.g., myocardial infarction, unstable angina, sepsis, thrombotic disorders, acute arterial thrombotic occlusion, and thromboembolism -
        211..212
/note= "thrombin cleavage site"
                                                                                                                                                                             /note= "O-phosphorylated"
                                                  /note= "N-glycosylated"
                                                                                 /note= "N-glycosylated"
                                                                                                                 /note= "N-glycosylated"
                                                                                                                                               /note= "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Page 50-52; 63pp; English.
                                                                                                                                                                                                                                                                                               02-FEB-2000; 2000US-0179801.
14-MAR-2000; 2000US-0189197.
                                                                                                                                                                                                                                                                  19-JAN-2001; 2001WO-US00020.
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                                                                                                                                                                                                                                                                                                                                                                                     Jones BE;
                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2001-496919/54.
                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAH26362.
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                                                                                                                                                                                                     WO200157193-A2.
   Cleavage-site
                                Modified-site
                                                            Modified-site
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                                                                                                                                                                                                                                                                                                                                                                              Gerlitz BE,
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Conservative: Mismatches: Indels:

Gaps:

Matches:

1.37e-159 2298.00 100.00% 100.00% 98.33%

Best Local Similarity:

Query Match:

Percent Similarity:

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1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGT 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTTT 1020
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               841 AGGGGCCTTGCAGAGCGCGCGGCTCAATCAGGCCGGCCAGGAGCCCTCGTGACGGGGCTGG 900
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               601 ATCCACCCTCCTCGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
                                                                                                                                                                                                                                                                                                                                                                                                                541 AGCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
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                                                                                                                                                                                                                                                                                                                   421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
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                                                                                                                                                                                                                         181 AGCCTGTGCTGGGGGACGGGACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                          241 CGCAGCGGCTGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                             121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCGTGCGCC 180
                                                                 61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
               661 GTCAGGCTTGGAAGTATGACCTGGGGCGCTGGGAAAGTGGGAACTTGGACCTGGACCTTGGACATC
US-09-763-153-1 (1-1245) x AAB82674 (1-461)
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Protein C derivatives, useful for treating vascular occlusive disorder, hypercoagulable state, thrombotic disorder and disease states predisposing thrombosis, comprises specific amino acid substitutions -
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present invention relates to a human protein C derivative. The present invention relates to a human occlusive disorders, protein is useful for treating vascular occlusive disorders, hypercoagulable states such as sepsis, disseminated intravascular coagulation, purpura fulminans, major trauma, major surgery, burns, coagulation, purpura fulminans, major transplantation, deep vein adult respiratory distress syndrome, transplantation, deep vein thrambosis, heparin-induced thrombocytopenia, sickle cell disease, thrambosis, heparin-induced thrombocytopenia, sickle cell disease, thrambosis, and hemolytic uremic syndrome, and also useful for treating purpura, and hemolytic uremic syndrome, and also useful for treating infarction, unstable angina, and stroke, Protein C derivatives with infarction, unstable angina, and stroke, Protein C derivatives with amino acid substitutions result in increased resistance to here.
                                                                     1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCGGCTACCTC 1200
1081 GGGGGGCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGACTGG 1140
                                                                                       protein C; human; vascular occlusive; burn; transplantation; deep vein thrombosis; sickle cell; thalassemia; thrombotic disorders; myocardial infarction; angina; stroke.
                                                                                                                                                 1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   00
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 1; Page 44-46; 57pp; English.
                                                                                                                                                                                                                                                                 AAB36895 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.37e-159
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                                                                                                                                                                                                                                                                                                                                          26-FEB-2001 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (ELIL ) LILLY & CO ELI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gerlitz BE, Jones BE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2001-007227/01.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens.
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1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACGGGAGGATGCCTGCGAGGGCGACGACAGT 1080
                                        1081 GGGGGGCCCATGGTCGCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                 1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
          Human; Protein C; N-glycosylation; APC; activated protein C; precursor; serum half-life; chromosome 2q13-q14; stroke; myocardial infarction; after venous thrombosis; disseminated intravascular coaqulation; DC; sepsis; septic shock; embolism; pulmonary embolism; burn; pregnancy; bone marrow transplantation; major surgery; trauma; ARDS; coaqulant; adult respiratory distress syndrome; alpha-l antitrypsin.
                                                   Novel conjugate useful for treating or preventing septic shock, stroke and myocardial infarction, comprises non-polypeptide group covalently attached to protein C polypeptide comprising an attachment group -
                                                                                                                         1201 GACTGGATCCATGGGCACATCAGAGGAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                     /label=_Activation_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                      /label= Lys_Arg_dipeptide
                                                                                                                                                                                                                                                                                                                                                                                                             /label= Mature_protein_C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pedersen AH, Freskgaard PO;
                                                                                                                                                                                                                                                                                                                                                                                        /label= Signal_peptide
                                                                                                                                                                                      AAU99001 standard; Protein; 461 AA.
                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                  Human Protein C precursor protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                  /label= Light_chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /label= Heavy_chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 4; Page 76-77; 92pp; English.
                                                                                                                                                                                                                              23-AUG-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (MAXY-) MAXYGEN APS.
(MAXY-) MAXYGEN HOLDINGS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-OCT-2001; 2001WO-DK00679.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18-OCT-2000; 2000DK-0001560.
18-OCT-2000; 2000US-242268P.
21-JUN-2001; 2001DK-0000970.
21-JUN-2001; 2001US-300154P.
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His/Iys/Arg/Asn/Asp/Gilu/Gily/Gili (4) a nuclective (v): (3) an expression vector (VI) comprising (v): (4) a host cell (VII) (5) increasing (M2) the functional in vivo half-
comprising (v) or (VII): (5) increasing (M2) the functional in vivo half-
iffe or the serum half-life of a parent protein c polypebtide.

Iffe or the serum half-life of a parent protein c polypeptide.

The conjugates, variants and protein c proteins are useful as medicaments, and in the manufacture of medicaments for the treatment (and medicaments, and in the manufacture of medicaments for the exament (and medicaments).

C diagnosis/prevention) of stroke, myocardial infarction, after venous shock, emboll e.g. pulmonary emboll, transplantation such as bone marrow transplantation, burns, pregenancy, major surgery/traum or adult transplantation, burns, pregenancy, major surgery/traum or adult transplantation, burns, pregenancy, major surgery/traum or adult transplantation. The conjugates have an increased in vivo half-life, antitypsin. The conjugates have an increased in vivo half-life, antitypsin. The conjugates have an increased bioavailability.

CC renal clearance, reduced immunogenicity and/or increased bioavailability.

CC renal clearance including longer duration between injections, and fewer side effects. Moreover, a choise and protein of less protein, and fewer side effects. Moreover, a reduced anticoagulant activity is beneficial to reduce the risk of reduced anticoagulant activity is beneficial to reduce the risk of reduced anticoagulant activity is beneficial to reduce the risk of the conjugate has an extended plasma life. The gene for protein C is corrected on chromosome 2413-q14. The present sequence represents precursor
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Conservative: Mismatches: Length: Matches: Indels: Gaps: .37e-159 2298.00 100.00% 100.00% 98.33% Best Local Similarity: 461 AA; percent Similarity: Alignment Scores: Sednence Query Match: 888888888888888888

461 415 0 0 0

US-09-763-153-1 (1-1245) x AAU99001 (1-461)

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241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                      181 AGCCTGTGCTGCGGGCACGGCACGTGCATCGGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                             121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                              61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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1141 GGTGAGGGCTGTTGGCTTCACAACTACGGCGTTTACACCAAAGTCAGCGGCTACCTC 1200
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                                                                                                                                                                                                                                                                                                                                                                                                              403 GlyGlyProMetValAlaSerPheHisGlyThrTrpPheLeuValGlyLeuValSerTrP 422
                                                                                                                                                                                                                                                                                                                                                                            901 GGCTACCACAGCAGCGAGAGAAGAAGGAGGCCAAGAAACGGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                                                                                  841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG 900
                                                                                                                                                                                          781 CTGCACCTGGCCCAGCCGCCACCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGAC 840
                                                                                                                                                                                 661 GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGGTGGACCTGGACATC 720
                                                                                                                                                                                                                    721 AAGGAGGTCTTCGTCCACCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780
                                                                                                                                                       541 AGCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGCTGGCCTGCGGGGCCAGTGCTC 600
                                                                                481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
        421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480
361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                                                                                                               601 ATCCACCCTCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
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Fgapop 6.0 , Fgapext
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 60 summaries

Minimum DB seq length: 0 Maximum DB seq length: 2000000000

Command line parameters:

MODEL-frame--YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7 Database :

pir1:* pir2:* pir3:* PIR_73:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

	Description	protein Clarita	protein C (activat	protein C (activat	protein C (activat	Coadulation factor	coadulation factor	coagulation factor				• •		COadulation factor	
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	Query Aatch Length DB	461	456	461	461	482	492	475	488	466	407	443	452	461	459
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ф	Ma	6	7	~	7	m	m	m	m	m	m	m	'n	m	m
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ALIGNMENTS

IIA; plasma protein C 9) precursor - human N; Al

C;Species: Homo sapiens (man)
C;Bate: 17-Mar-1997 #sequence_revision 17-Mar-1997 #text_change 16-Jul-1999
C;Accession: A52426; A21781; A23789; A00927
R;Foster, D.C.; Yoshitake, S.; Davie, E.W.
Procc. Natl. Acad. Sci. US.A. 82, 4673-4677, 1985
A;Fitle: The nucleotide sequence of the gene for human protein C.
A;Reference number: A22331; MUID:85270390; PMID:2991887

A; Accession: A22331

A; Molecule type: DNA
A; Residues: 1-461 <F0S1>
A; Residues: 1-461 <F0S1>
A; Cross-references: GB:MIJ228; NID:g190333; PIDN:AAA60166.1; PID:g190334
A; Cross-references: GB:MIJ228; NID:g190333; PIDN:AAA60166.1; PID:g190334
B; PLOC. Natl. Acad. Sci. U.S.A. 83, 546-550, 1986
A; Title: Evolution and organization of the human protein C gene.
A; Reference number: A25426; MUID:86120978; PMID:3511471
A; Accession: A25426

A; Molecule type: DNA A; Residues: 1-445,'L', 446-461 <PLU> A; Cross-references: GB:M12712; NID:9190330; PIDN:AAA60165.1; PID:9190332

Tue Mar 18 16:19:33 2003

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162 420 202 540 222 009 242 999 262 720 282 780 302 840 322 900 342

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961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTTT 1020
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                                     TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
63 IleCysAspPheGluGluAlaLysGluIlePheGlnAsnValAspAspThrLeuAlaPhe 82
                                                                                                                    181 AGCCTGTGCGGGCACGCCACGTGCATCGACGCCATCGGCAGCTTCAGCTGCGACTGC
                                                                                                                                                                                               CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG
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A. Residues: 1-64 (-8EC)
A. Cross-references: GB:X02750; NID:g35689; PIDN:CAA26528.1; PID:g763120
B. M. Residues: 1-64 (-8EC)
B. M. State and Chem. 265, 11397-11404, 1990
A. Title: Beta protein C is not g1ycosylated at asparagine 329. The rate of translation m A. Reference number: A44605; MUID:90293094; PMID:1694179
Contents: annotdation, carbohydrate binding sites; activation peptide contents: annotdation, carbohydrate binding sites; activation peptide contents annotdation, carbohydrate binding sites; activation peptide contents: A. Ti. Ling, V. T.; Spellman, M. W.
Blol. Chem. 267, 510-25107, 1992
B. A. Title: O-linked fucose is present in the first epidermal growth factor domain of factor A. Reference number: A44606; MUID:92184750; PMID:1544894
                                                                                                   A; Molecule type: mRNA
A; Residues: 'Q', 107-461 EVOS2>
A; Residues: 'Q', 107-461 EVOS2>
A; Residues: 'Q', 107-461 EVOS2>
A; Creatences: GB: KO2059; NID: g190322; PIDN: AAA60164.1; PID: g190323
B; Beckmang, R.J.; Schmidt, R.J.; Santerre, R.F.; Plutzky, J.; Crabtree, G.R.; Long, G.L. NuCleic Acids Res. 13, 5233-5247, 1985
A; Title: The structure and evolution of a 461 amino acid human protein C precursor and 1 A; Reference number: A23789; MUID: 85269639; PMID: 2991859
A; Accession: A23789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    137Modified site: erythro-beta hydroxyaspartic acid (Asp) #status experimental 39,290,355/Binding site: carbohydrate (Asn) (covalent) #status experimental 1-212/Cleavage site: Arg-Leu (thrombin) #status experimental
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371/Binding site: carbohydrate (Asn) (covalent) (partial) #status atypical
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Proc. Natl. Acad. Sci. U.S.A. 81, 4766-4770, 1984
A;Title: Characterization of a cDNA coding for human protein C.
A;Reference number: A21781; MUID:84272714; PMID:6589623
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B. Perlund, P.: Stenflo, J.

B. Biol. Chem. 257, 12170-1219, 1982

A. Title: Amino acid sequence of the light chain of bovine protein C.

A. Reference number: Al885; MUD:8307325; PMID:6896876

A. A. Accession: Al835

A. Molecule type: protein

A. Title: beta-Hydroxyasparic acid in vitamin K-dependent protein C.

A. Title: beta-Hydroxyasparic acid in vitamin K-dependent protein C.

A. Title: Amino acid sequence of the heavy chain of bovine protein C.

A. Reference number: Al836; MUD:83007326; PMID:6896877

A. Title: Amino acid sequence of the heavy chain of bovine protein C.

A. Reference number: Al836; MUD:83007326; PMID:6896877

A. Molecule type: protein

A. Reference number: Al836; MUD:833033254; PMID:6896877

A. Molecule type: protein

A. Reference number: Al836; MUD:8330331351; PMID:6896877

A. Title: Proteolytic formation and properties of gamma-carboxyglutamic acid-domainless p. A. Chothents: annotation; activation; calcium binding

A. Conment: Serior or annotation; activation; calcium binding

B. Jol. Chem. 258, 554-5560, 1983

Title: Structural changes required for activation of protein C is the zymogen of the vitamin K-dependent serine protein C is the zymogen of the vitamin R-dependent serine protein C is the zymogen of the vitamin R-dependent serine protein E.
                                                                                                                       Protein C (activated) (EC 3.4.21.69) precursor - bovine (fragment)
N;Alternate names: autoprothrombin IIA; plasma protein C
C;Species: Bos primingenius taurus (cattle)
C;Date: 30-Nov-1980 #sequence_revision 17-Mar-1987 #text_change 16-Jul-1999
C;Accession: A26250; A18385; A18386; A00928
R;Long, G.L.; Balagaje, R.M.; MacGillivray, R.T.A.
Proc. Natl. Acad. Sci. U.S.A. 81, 5633-5656, 1984
Title: Cloning and sequence of liver cDNA coding for bovine protein C.
Reference number: A26250; MUID:885014826; PMID:6091100
1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCAGAAG 1245
                      443 ASPTrpIleHisGlyHisIleArgAspLysGluAlaProGlnLys 457
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    42 AlaAsnSerPheLeuGluGluValArgAlaGlySerLeuGluArgGluCysMetGluGlu 61
                                                                  222 GlyAspSerProTrpGlnAlaIleLeuLeuAspSerLysLysLysLysLeuAlaCysGlyGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ATCTGTGACTTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC
                                                                                                                                                                                                                           181 AGCCTGTGCCGGCACGCCACGTGCATCGACGGCATCGGCACCTTCAGCTGCGACTGC
                                                                                                                                                                                                                                                                                                                                            AspLysGlyTrpGluGlyArgPheCysGlnGlnGluMetGlyPheGlnAspCysArgVal
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Process (actual population) (E.S. 4.4.1.2) precursor - rate (catual population) (actual population) (accession: S18994; S24312 and "Ratual color population") (accession: S18994; S24312 and "Ratual color population") (accession: S18994; S24312 and "Ratual color population") (accession: The color colo
                                           955 AACTICATCAAGATICCCGIGGICCCGCACAAIGAGIGCAGCGAGGICAIGAGCAACAIG 1014
                                                                                                                                   1015 GTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGC 1074
                                                                                                                                                                                                                         GACAGTGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTG 1134
                                                                                                                                                                                                                                                                                                              1135 AGCTGGGGTGAGGCCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGC 1194
                                                                                                                                                          340 GlyTrpGlyTyrArgAsp------GluThrLysArgAsnArgThrPheValLeu 355
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coagulation factor Xa (EC 3.4.21.6) precursor - rat
C;Species: Rattus norvegiuus (Norway rat)
C;Date: 31-Jan-1995 #sequence_revision 07-Feb-1997 #text_change 08-Dec-2000
C;Accession: $49075; JC4670; PS0191; PS0190; I62745
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201 AspLeuGluAspGluLeuGluProAspProArgIleValAsnGlyThrLeuThrLysGln
                                                                                                                                                                GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTTGGCGGCGCTGTAGCTGT
                                                      GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCCGCAGTGAAGTTCCCT
                                                                                                                                                                                                        GACCAAGAAGACCAAGTA-----GATCCGCGCGTCATTGATGGGAAGATGACCAGGGGG
                                                                                                                                                                                                                                                              GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA
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                                                                                                                                                                                                                                                                                                          Species: Mus musculus (house mouse)
Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 16-Jun-2000
ccession: JX0210
           1135 AGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGC 1194
                         61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                  Tada, N.; Sato, M.; Tsujimura, A.; Iwase, R.; Hashimoto-Gotoh, T.
Elschem. 111, 491-495, 1992
A:Title: Isolation and characterization of a mouse protein C cDNA.
A;Reference number: JX0210; MUID:92316897; PMID:1618739
                                                                1195 TACCTCGACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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Mismatches:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;Stanton, C.; Ross, P.; Hutson, S.; Wallin, R.
Thromb. Res. 80, 63-73, 1995
A;Title: Evidence for competition between vitamin K-dependent clotting factors for intra A;Reference number: A58498; MUID:96093366; PMID:8578539
A;Accession: S49075
A;Accession: S49075
A;Accession: S49075
A;Accession: L482 Asraha
A;Residues: 1-482 Asraha
A;Residues: 1-782 Asraha
A;Note: Bull:X79807; NID:9506600; PIDN:CAA56202.1; PID:9506601
A;Note: neither the complete nucleic acid sequence nor the complete translation are show R;Stanton, C.; Ross, R.P.; Hutson, S.; Wallin, R.
A;Note: neither the complete nucleic acid sequence nor the complete translation are show R;Stanton, C.; Ross, R.P.; Hutson, S.; Wallin, R.
A;Note: neither the complete nucleic acid sequence nor the complete translation of rat and human clotting factor-X-encoding cDNAs.
A;Reference number: JC4670; MUID:96194815; PMID:8647460
A;Molecule type: MRNA
A;Residues: 1-482 Asra2>
A;Cross-references: ERBL:X79807; NID:9506600; PIDN:CAA56202.1; PID:9506601
A;Molecule type: MUID:92041742; PMID:1718949
A;Cross-references: ERBL:X79807; MUID:92041742; PMID:1718949
Accession: 109, 890-898, 1991
A;Cross-reference number: PS0190; MUID:92041742; PMID:1718949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           32-460/Domain: trypsin homology CTRY>
6.47,54,56,59,60,65,66,69,72,79/Modified site: gamma-carboxyglutamic acid (Glu) #stat 6.47,54,56,59,60,65,66,69,72,79/Modified site: gamma-carboxyglutamic acid (Glu) #stat 7.50,90-101,95-110,112-121,129-140,136-149,151-164,172-340,238-243,259-275,388-402,41
7-5103/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status predicted
F:208/Binding site: carbohydrate (Asn) (covalent) #status predicted
F:218/Binding site: carbohydrate (Asn) (covalent) #status predicted
F:218/Binding site: carbohydrate (Asn) (covalent) #status predicted
F:218/Binding site: Arg-Ile (coagulation factor IXa, coagulation factor VIIa) #stat
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79
153
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Mismatches:
Indels:
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A; Residues: 41-58, 'X', 60-65 <ENJ1>
A; Accession: PS0190
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Best Local Similarity:
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982 CACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGC 1041
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                                                                                                                                                                                                                                                                                                                                                                                                            301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGT 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    132 AspAsnGlyAspCysAspGlnPheCysArgGluGluGlnAsnSerValValCysSerCys 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
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                                                                                               113 ThrGluGlyPheCluGlyLysAsnCysGluLeuPheValArglysLeu---CysSerLeu 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     192 GlubroAspProGluAspLeuMetProAspAlaAspIleLeuTyrProThrGluSerPro 211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 272 AlaAlaHisCysLeuHisGlnAlaLysArgPheLysValArgValGlyAspLeuAsnThr 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GluGlnGluAspGlyGlyGluMetValHisGluValAspMetIleIleLysHisAsnLys 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           804
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        922 AAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCC 981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172 CysGlyLysThrAsnLysGlyArgAlaLysArgSerValAlaLeuAsnThrSerAsnSer 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCGCCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTG 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CICICGCAGACCAIAGIGCCCAICIGCCICCCGGACAGCGGCCTIGCAGAGCGCGAGCIC 864
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508 CTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TACAGCAAGAGCACCACCGACAATGACATCGCACTGCTGCTGGACCTGGCCCAGCCCGCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG
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R; Fujikawa, K.; Titani, K.; Davie, E.W.
Proc. Natl. Acad. Sci. U.S.A. 72, 3359-3363, 1975
A; Title: Activation of bovine factor X (Stuart factor): conversion of factor Xaalpha A; Reference number: Al3504; MUID:76053121; PMID:1059122
A; Contents: annotation; activation.
R; Sugo, T.; Blork, I.; Holmgren, A.; Stenflo, J.
J. Biol. Chem. 259, 5705-5710, 1984
A; Title: Calcium binding properties of bovine factor X lacking the gamma-carboxygluta A; Reference number: A38024; MUID:84185716; PMID:5546930
A; Contents: annotation; calcium binding
R; Morita, T.; Jackson, C.M.
J. Biol. Chem. 261, 4008-4014, 1986
A; Reference number: A38025; MUID:86140210; PMID:3949800
A; Contents: annotation; sulfate binding
C; Comment: Factor Xa converts prothoromin to thrombin during blood clotting.
C; Comment: The two chains are formed from a single-chain precursor by the excision of C; Comment: The activation peptide is cleaved by factor IXa (in the intrinsic pathway)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C;Comment: Calcium binds to the gamma-carboxyglutamic acid (Gla) residues and, with s C;Comment: The gamma-carboxyglutamic acid residues arise by a posttranslational, vita C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A years it is a position: 13934

A personal position: 13934

C; Function:

A personal position atalyzes the proteolytic activation of prothrombin to thrombin in the A; Peathway: blood coagulation

C; Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology charants at a paral sequence #status predicted <SIG>
C; Keywords: beta hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglu F; 1-15/Domain: Signal sequence #status predicted <SIG>
F; 16-40/Domain: Gla domain homology <GIA>
F; 1-180/Product: coagulation factor X light chain #status experimental <LCH>
F; 11-180/Product: coagulation factor X light chain #status experimental <LCH>
F; 183-492/Product: coagulation factor X heavy chain #status experimental <HCH>
F; 183-492/Product: coagulation factor X heavy chain #status experimental <AHC>
F; 183-492/Product: coagulation factor X heavy chain #status experimental <AHC>
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F; 184-402/Product: coagulation factor X heavy chain #status experimental <AHC>
F; 184-402/Product: coagulation factor X heavy chain #status experimental <AHC>
F; 184-402/Product: coagulation factor X heavy chain #status experimental <AHC>
F; 187-403/A/Cleavage site: Arg Ile (coagulation factor X heavy coagulation X heavy coagulation X heavy c
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                     A; Contents: annotation; active site
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Coagulation factor Xa (EC 3.4.21.6) precursor - bovine
N.Alternate names: Stuart factor
C.Species: Bos primigenius tarurus (cattla)
C.Species: A-Apr-1984 #sequence_revision 17-Mar-1987 #text_change 16-Jul-1999
C.Accession: A22867; A14997; A12030; A34412; S39414; A00925
R.Firuq, M.R.: Campbell, R.M.: MacGilliurray, T.A.
Nucleic Acids Res. 12, 4481-4492, 1984
A;Title: Blood coagulation factor X mRNA encodes a single polypeptide chain containing a A;Accession: A22867; MUID:84247315; PMID:6330671
A;Accession: A22867
A;Molecule type: mRNA
A;Racidues: 1487 crbn>
A;Molecule type: mRNA
A;Racidues: 1487 crbn>
A;Cross-references: GB:X00673; NID:9192; PIDN:CAA25286.1; PID:9193
R;Enfield, D.L.; Ericsson, L.H.; Fulikawa, K.; Walsh, K.A.; Neurath, H.; Titani, K.
Biochemistry 19, 659-667, 1980
A;Title: Amino acid sequence of the light chain of bovine factor X-1 (Stuart factor).
A;Reference number: A14997; MUID:80130563; PMID:6766735
A;Molecule (A) A;Accession (A) A;Acces
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R; Titani, K.; Hermodson, M.A.; Fujikawa, K.; Ericsson, L.H.; Walsh, K.A.; Neurath, H.; E
Biochemistry 11, 4899-4903, 1972
A;Title: Bovine factor X-1a (activated Stuart factor). Evidence of homology with mammali
A;Reference number: A12453; MUID:73053314; PMID:4264286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ž
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;Persson, E.; Selander, M.; Linse, S.; Drakenberg, T.; Oehlin, A.K.; Stenflo, J. J. Biol. Chem. 264, 16897-16904, 1989
A;Title: Calcium binding to the isolated beta-hydroxyaspartic acid-containing epidermal A;Reference number: A34412; MUID:89380326; PMID:2789221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A. Molecule type: protein
A. Residues: 41-102, N., 104-180 < ENF>
A. Residues: 41-102, N., 104-180 < ENF>
Blochem. Blophys. Res. Commun. 115, 8-14, 1983
A.Title: The occurrence of beta-hydroxyaspartic acid in the vitamin K-dependent blood A. Reference number: A20274; MUID: 83308813; PMID: 6688526
A. Reference number: A20274; MUID: 83308813; PMID: 6688526
A. Contents: annotation; revision to residue 103
C. Titani, K., Fulikawa, K.; Enfield, D.L.; Ericsson, L.H.; Walsh, K.A.; Neurath, H. Fritani, K., Fulikawa, K.; Enfield, D.L.; Ericsson, L.H.; Walsh, K.A.; Neurath, H. Ritle: Bovine factor X-1 (Stuart factor): amino-acid sequence of heavy chain.
Reference number: A12030; MUID: 76053069; PMID: 1059093
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A;Rolecule type: protein
A;Residues: 183-292,294-295,'GDE',299-334,336-348,'AE',351-354,356-441,'GKFG',446-492
A;Residues: carbohydrate binding sites and disulfide bonds were determined
R;Persson, E.; Selander, M.; Linse, S.; Drakenberg, T.; Ochlin, A.K.; Stenflo, J.
T. Biol. Chem. 264, 16897-16904, 1989
                                                                                                1042 ATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGCCCCATGGTCGCCTCC 1101
                                                                                                                                                                                                                                                                                                        1102 TICCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGGCTGTGGGCTCCTT 1161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1162 CACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATC 1221
                                                                                                                                                                                                                                                                                                                                                        445 GlyLysTyrGlylleTyrThrLysValThrAlaPheLeuLysTrDIleAspArgSerMet 464
385 ArgAsnThrCysArgLeuSerThrSerPheSerIleThrGlnAsnMetPheCysAlaGly 404
                                                                                                                                                                      405 TyrAspAlaLysGlnGluAspAlaCysGlnGlyAspSerGlyGlyProHisValThrArg
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A; Residues: 183-196;199-209;216-233 <INO>
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A;Residues: 85-126 <PER>
A;Note: beta-hydroxyaspartic acid site
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Eur. J. Biochem. 218,
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QQ	97	AsnGlnGlyHisCysLysAspGlyIleGlyAspTyrThrCysThrCys	112
Qy	241	CGCAGCGGCTGGGAGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAAT	291
QQ	113		128
Qy	292	TGCTCGCTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCG	351
qq	129	CysSerLeuAspAsnGlyGlyCysAspGlnPheCysArgGluGluArgSerGluValArg	148
70 Q	352	TGTAGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTG	411
a .	L49	CyssercysAlaHisGlyTyrValLeuGlyAspAspSerLysSerCysValSerThrGlu	168
ر م	412	AAGTTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGGAGTCACTGAAA ::: ::: A GATTCCCTTGTGGGAGGGAAGCGGATGGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGA	468
3 8	. 0	And the root sout ful structure and the doctor got for the relation to the control of the contro	207
S 2	189	ChuaspalateuaspalaserGluteuGluHisTyraspProAlaaspLeuSerProTh	20 4 208
	504		504
g	209	GluSerSerLeuAspLeuLeuGlyLeuAsnArgThrGluProSerAlaGlyGluAspGly	228
οy	505		552
qq	229		248
Οy	553	GIGGTCCIGCTGGACTCAAAGAAGAAGCIGGGGGGGGGGG	612
QQ	249	${\tt AlaLeuLeuValAsnGluGluAsnGluGlyPheCysGlyGlyThrIleLeuAsnGluPhe}$	268
ΟŸ	613	TGGGTGCTGACAGCGCCCCACTGCATGCATGAGTCCAAGAAGCTCCTTGTCAGCCTTGGA	672
qq	269		288
δŏ	673	GAGTATGACCTGCGCGCTGCGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTC	732
ор	289		308
δ i	733	GTCCACCCCAACTACAGCAAGAGCACCACCGACATGACATGCTGCACTGGCCCCCCAACTACTGCTGCACTGGCCCCCAACTACTGCACTGCTGCACTGGCCCCCAACTGCTGCACTGCTGCACTGCTGCCTGC	6 6
Q Q	303		7
Oy Dp	793 329	CAGCCCGCCACCTCTCGCAGACCATGAGTGCCCATGTGCTCCCGGACAGCGGCCTTGCA :::: :: ThrPtolleArqPheArqArdAsnValAlaProAlaCvsLeubroGlubysAspTrpAla	852 348
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3	349	GluAlaThrLeuMetThrGlnLysThrGlyIlevalSerGlyPheGly	ف د
	910	AGCAGCC	696
Q C	365	ArginrHısGluLysGlyArgLeuSerSerThrLeuLysMetLeuGluVal	381
Oy Db	970	CCCGTGG	1029
٥	1030		1089
연	402		21
oy Dp	1090	AIGGICGCCICCTICCACGCACTGGITCCTGGIGGCCTGGIGAGCTGGGGTAAGGGCCCTGTIGGTAATATATATAATAAAAAAAAAA	1149 441
δŏ	1150	TGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC	1209
Вр	442		461

ΟŽ	1210
qq	462 AspLysIleMetLysAlaArgAlaGlyAlaAlaGlySerArg
Qy Db	1231 GAAGCCCC 1239 479 GluAlapro 481
RESU EXCH Coag N; Al C; Sp C; Da C; Da	EXCH Coagulation factor Xa (EC 3.4.21.6) precursor - chicken NALternate names: virus-activating proteinase C;Species: Gallus gallus (chicken) C;Date: 12-Feb-1993 #sequence_revision 07-Feb-1997 #text_change 16-Jul-1999 C;Accession: S15838; S20380; S20381; X; Wada, X; Asaka, J; Gotoh, B.; Ogasawara, T.; K;Suzuki, H.; Harada, A.; Hayashi, Y; Wada, K.; Asaka, J.; Gotoh, B.; Ogasawara, T.;
A A ; A	FEBS Lett. 283, 281-285, 1991 A.Title: Primary structure of the virus activating protease from chick embryo. Its id A.Reference number: S15838; MUID:91257322; PMID:2044767 A.Accession: S15838 A.Status: not compared with conceptual translation
A; A A; B B; G	MOACCULE TYPE: MRNA RESIDUOS: 1.475 KSUZ> Cross-references: DDBJ:D00844; NID:9222869; PIDN:BAA00724.1; PID:9222870 GGCD), B.; Yamauchi, F.; Ogasawara, T.; Nagai, Y.
A A A	Title: Isolation of factor Xa from chick embryo as the amniotic endoprotease respon Reference number: \$20380; MUID:92164779; PMID:1537403 Accession: \$20380 Molecule type: protein
A A A A A A A A A A A A A A A A A A A	<pre>Mestques: 41-23 <602> Accession: 520381 Molecule type: protein Residues: 241-246,'X',248-251,'X',253-261 <60T></pre>
A) I	Function: Description: catalyzes the proteclytic activation of prothrombin to thrombin in the Desthase: blood communation
OOFF	Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglu 1-20/Domain: signal sequence #status predicted <sig>21.40/Domain: propeptide #status predicted <pro></pro></sig>
4 F4 F4 F	22-04-Condin: Gra undain includy North Chain #status experimental <lch>90-121/Domain: EGF homology <eg1>00-121/Domain: EGF homology <eg2>00-121/Domain: EGF homology <eg3>00-121/Domain: EGF homology</eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg3></eg2></eg2></eg2></eg2></eg2></eg2></eg1></lch>
F F F F I	129-15//Domain: EGF homology <eg2.> 186-475/Product: coagulation factor X heavy chain #status predicted <hch> 186-240//Domain: activation peptide #status predicted <apt> 241-475/Product: coagulation factor Xa heavy chain #status experimental <ahc></ahc></apt></hch></eg2.>
FFFFF	F:241-468/Domain: trypsin nomology <pre>/*ix> F:241-468/Domain: trypsin nomology <pre>/*ix> F:46.47.54.56,59,60,65,66,69,72,72,75,79/Modified site: gamma-carboxyglutamic acid (Glu) F:57-62,90-101,95-110,112-121,129-140,136-152,154-167,175-348,247-252,267-283,396-410 F:103/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status predicted F:196,207,228,285/Binding site: carbohydrate (Asn) (covalent) #status predicted F:282,328,425/Active site: His, Asp, Ser #status predicted</pre></pre>
Alig Pred Scor Perc Best Quer DB:	Alignment Scores: 2.47e-42 Length: 475 Pred. No.: 801.50 Matches: 163 Percent Similarity: 54.77% Conservative: 84 Best Local Similarity: 36.14% Mismatches: 147 Query Match: 147 DB: 1 Gaps: 8
-SN	US-09-763-153-1 (1-1245) x EXCH (1-475)
QY	1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCGGGGGGGG
Qy Db	61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120

Qy	121	TGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCGGTGCGCC 180 ::: :::	
Qy	181 95	AGCCTGTGCGGGCGCGCGCGCGTGCACGGCATCGGCAGCTTCAGCTGCGACTGC 2	
ΟŊ	241	CGCAGCGGCTGGGACGCCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCGTG 30	
qq	113		
À C	301	GACAACGCCGCCTGCACCATTACTGCCTAGAGGAGGTGGGCTG ::: AsnAsnGlyAspCysGluGlnPheCysSerIleLysLysSerVa	
Ş q	352		
οy	412	AAGTICCCITGIGGGAGCCCTGGAAGGGGAIGGAGAAAAGGGCAGICACCIGAAAGG	
ор	172	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
oy B	472	GACACAGAAGACCAA	
ογ	486		
qq	212	GluGluValPheThrThrThrGluSerProThrProProArgAsnGlySerSer 23	
οy	487	2GAAGACCAAGTAGATCCGCGGTTCATTGATGGAAGATGACCAAGTAGAGAGATCA	
QQ	232	::: :::::: ::::::	
δy	541		
QQ	252	::::: ::: CysProTrpGlnAlaValLeu1leAsnGluLysGlyGluGluPheCysGlyGlyThr1le	
QY	601	ATCCACCCTCCTGGGTCCTGACAGCGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT	
2	7/7		
>	661	GTCAGGCTTGGAGAGTATGACCTGCGGGGGGAGAAGTGGGACTGGACCTGGACATC 720 ::: ::: ValValValGlyGluValAspArqGluLysGluGluHisSerGluThrThrHisThrala 311	
ò	721	0-	
연	312		
οy	781	CTGCACCTGGCCCAGCCCACCCTCTCGCAGACCATACTGCCCATCTGCCTCCCGGAC 840	
Dp	332		
δy	841	AGCGCCTTGCAGAGCGCGAGGTCAATCAGCCGGCCAGGAGACCCTCGTGACGGGC 897	
QQ	352	AlaAspPheAlaAsnGluValLeuMetAsnGlnLysSerGlyMetValSerGly 369	
οy	868	TGGGGCTACCACAGCAGCGGAGAGAGGAGGCCAAGAGAAACCGCACCTTCGTCCAC 957	
QQ	370		
yo 4	958	TTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTG 1017	
3 8			
S S	405	*USGRANCATGCTGTGGGGGATCCTGGGGACGGCAGARGCCTGCGAGGGGGA 1077 :::	

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              34-235/Cleavage site: Arg-Ile (coagulation factor IXa, coagulation factor VIIa) #stat
276,322,419/Active site: His, Asp, Ser #status experimental
                                                         7
                                                                                                A; Molecule type: protein

A; Residues: 183-234 <1NO>

A; Note: glycosylation sites

A; Note: identification and characterization of beta-hydroxyaspartic acid

B; Jagadeeswaran, P.; Reddy, S.V.; Rao, K.J.; Hamsabhushanam, K.; Lyman, G.

Gene 84, S.J7-519, 1989

A; Title: Cloning and characterization of the 5' end (exon 1) of the gene encoding human

A; Reference number: IS4051; MUID:90128299; PMID:2612918
A; Molecule type: protein
A; Residues: 41-179 <amb. Momba
R; Inoue, K.; Morita, T.
Eur. J. Biochem. 218, 153-163, 1993
A; Title: Identification of O-11nKed oligosaccharide chains in the activation peptides
A; Reference number: S39414; MUID:94062825; PMID:8243461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41 AlaAsnSerPheLeuGluGluMetLysLysGlyHisLeuGluArgGluCysMetGluGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGGAGTGCATAGAGGAG 60
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Mismatches:
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A; Residues: 1-23 <RES>
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970 cccgrggrccccccacaargagrgcagcgaggrcargagcaacarggrgrgrgagaacarg 1029
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421 TOTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACAAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               172 CysGlyLys-----GlnThrLeuGluArgArgLysArgSerValAlaGlnAlaThrSer 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   230 AsnAsnLeuThrArgIleValGlyGlyGlnGluCysLysAspGlyGluCysProTrpGln 249
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     733 GICCACCCCAACIACAGCAAGAGCACCACCGACAAIGACAICGCACIGCIGCACCIGGCC 792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   310 LysHisAsnArgPheThrLysGluThrTyrAspPheAspIleAlaValLeuArgLeuLys 329
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 853 GAGCGCGAGCTCAATCAGGCCGGCCAGGAGACC---CTCGTGACGGCTGGGGCTACCAC 909
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 910 AGCAGCCGAGAGGAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAGATT 969
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaargGlyTyrThrLeuAlaAspAsnGlyLysAlaCysIleProThrGlyProTyrPro 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                190 SerSerGlyGluAlaProAspSerIleThrTrpLysProTyrAspAlaAlaAspLeuAsp 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               210 ProThrGluAsnProPheAspLeuLeuAspPheAsnGlnThrGlnProGluArgGlyAsp 229
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                                                                                                                                                                                                                                                                                                                    95 -----CysGlnAsnGlnGlyLysCysLysAspGlyLeuGlyGluTyrThrCysThrCys 112
                                                                                                                                                                                                                                                                                                                                                                                                  241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                       132 AspAsnGlyAspCysAspGlnPheCysHisGluGluGluGlnAsnSerValValCysSerCys 151
                                                                                      121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCCGTGCGCC 180
61 ThrCysSerTyrGluGluAlaArgGluValPheGluAspSerAspLysThrAsnGluPhe 80
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                                                                                                                                                                    81 TrpAsnLysTyrLysAspGlyAspGlnCysGluThrSerPro--
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F;151-187/Domain: EGF homology <EG2>
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Best Local Similarity:
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                                                                                                                                                                                                                                                                                                                                                                                                          gulation factor VIIa (EC 3.4.21.21) precursor [validated] - human pecies: Homo sapiens (man).

Decies: Homo sapiens (man)

Date: 19-May-1989 #sequence_revision 19-May-1994 #text_change 08-Dec-2000

C;Accession: A28322; A23819; A31186; B3186; B3524

R;O'Hara, P.J.; Grant, F.J.; Haldeman, B.A.; Gray, C.L.; Insley, M.Y.; Hagen, F.S.; Murr Proc. Natl. Acad. Sci. U.S.A. 84, 5158-5162, 1987

A;Title: Nucleotide sequence of the gene coding for human factor VII, a vitamin K-depend A;Reference number: A28322; MUID:87260948; PMID:3037537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A.Cross-references: GB:M1323; NID:g182799; PIDN:AAA88040.1; PID:g182801
R;Thim, L.; Bjoern, S.; Christensen, M.; Nicolaisen, E.M.; Lund-Hansen, T.; Pedersen, A. Biochemistry 27, 7785-7793, 1988
A;Title: Amino acid sequence and posttranslational modifications of human factor VII-a fa;Reference number: A90539; MUID:89088153; PMID:3264725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bjoern, S.; Foster, D.C.; Thim, L.; Wiberg, F.C.; Christensen, M.; Komiyama, Y.; Peder Biol. Chem. 266, 11051-11057, 1991
Fitle: Human plasma and recombinant factor VII. Characterization of O-glycosylations a Reference number: A40529; MUID:91250411; PMID:1904059
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Oagulation factor IX in the presence of calcium and tissue factor

Chapterian and cagulation factor X; EGF homology; Gla domain homology; Chapterianily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology

Chapterianily: coagulation factor X; EGF homology; Gla domain homology; carboxyglutanily: 21-60/Domain: signal sequence #status predicted <SIG>
Fillo/Domain: propeptide #status predicted <PRO>
Fillo/Domain: Gla domain homology <GLA>
Fillo-12/Product: coagulation factor VIIa light chain #status experimental <MAI>
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Eur. J. Blochem. 234, 293-300, 1995
A;Title: Structurally and functionally distinct Ca(2+) binding sites in the gamma-carbox
A;Reference number: S63524; MUID:96096752; PMID:8529655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A.Cross-references: GB:J02933; NID:g180333; PIDN:AAA51983.1; PID:g180334
R;Hagen, F.S.; Gray, C.L.; O'Hara, P.; Grant, F.J.; Saari, G.C.; Woodbury, R.G.; Hart,
RC: Natl. Acad. Sci. U.S.A. 83, 2412-2416, 1986
A;Title: Characterization of a cDNA coding for human factor VII.
A;Reference number: A23819; MUID:86205965; PMID:3486420
         1090 ATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGGC 1149
                                                                                                                        1150 IGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                             A;Map position: 13q34-13q34
A;Introns: 22/1; 44/1; 97/3; 106/1; 144/1; 191/1; 227/3; 269/1
C;Function:
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A; Residues: 61-65;99-103;105-109;213-217;308-312 <PER>C;Genetics:
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                                                                                                                                                                                                                                          1210 CATGGGCACATCAGAGACAAGGAAGCCCCCCAG 1242
                                                                                                                                                                                                                                                                                                 463 AspArgSerMetLysThrArgGlyLeuProLys 473
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A; Residues: 213-466 <TH2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: protein A; Residues: 61-212 <THI>
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Fig. 23-46/Product: coagulation factor VIIa heavy chain #status experimental AM2>
Fig. 33-44/Domain: trypsin homology cfry>
Fig. 447/Domain: fig. 487/Domain: fig. 67/Domain: fig. 67/
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----Alaser 112
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             355 AGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAG 414
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193 TyrProCysGlyLys---IleProIleLeuGluLysArgAsnAla------- 206
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            652 -----AAGCTCCTTGTCAGGCTTGGAGATATGACCTGCGGCGCGTGGGAGAGTGGGAG 705
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91-127/Domain: EGF homology <EG2>
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C.Function:
A.Description: catalyzes the proteolytic activation of coagulation factor X in the prese
gulation factor IX in the presence of calcium and tissue factor
A.Pathway: blood coagulation extrinsic pathway
C.Superfamily: coagulation extrinsic pathway
C.Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology
F.1-152/Product: coagulation factor VIIa light chain #status experimental <MAl>
F.1-47/Domain: Gla domain homology (fragment) <GLA>
F.50-81/Domain: EGF homology <EGI>
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A; Residues: 58-62, X', 64-68 <MCM>
A; Note: the residue designated 'X' was determined to be hydroxyaspartic acid
R; Hase, S.; Kawabata, S.; Nishimura, H.; Takeya, H.; Sueyoshi, T.; Miyata, T.; Iwanaga,
J. Blochem. 104, 867-868, 1988
A; Title: A new trisaccharide sugar chain linked to a serine residue in bovine blood coag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: protein
A; Residues: 1-407 < TAK>
R; McMullen, B.A.; Fujikawa, K.; Kisiel, W.
A; McMullen, B.A.; Fujikawa, K.; Kisiel, W.
A; Ochem. Biophys. Res. Commun. 115, 8-14, 1983
A; Lile: The occurrence of beta hydroxyaspartic acid in the vitamin K-dependent blood bference number: A20274; MUID:83308813; PMID:6688526
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C;Species: Bos primigenius taurus (cattle)
C;Species: Bos primigenius taurus (cattle)
C;Date: 21-May-1990 Heaquence_revision 23-Mar-1995 #text_change 16-Jul-1999
C;Accession: A31979; C20274
R;Takeya, H.; Kawabata, S.; Nakagawa, K.; Yamamichi, Y.; Miyata, T.; Iwanaga, B. Biol. Chem. 263, 14686-14877, 1988
A;Title: Bovine factor VII Its purification and complete amino acid sequence. A;Reference number: A31979; MUID:89008362; PMID:3049594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1111 ACCTGGTTCCTGGTGGCCTGGTGAGCTGGGGTGAGGCTGTGGGGCTCCTTCACAACTAC 1170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
                                                                                                                                                                                                                                                                                                                     946 TTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATG 1005
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            321 LeuCysLeuProGluArgThrPheSerGluArgThrLeuAlaPheVal---ArgPheSer 339
                                                                                                                                                                                                                                                                                                                                                                      355 LeuGluLeuMetValLeuAsnValProArgLeuMetThrGlnAspCysLeuGlnGlnSer 374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    375 ArgLysValGlyAspSerProAsnIleThrGluTyrMetPheCysAlaGlyTyrSerAsp 394
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                            766 AATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCCTCTCGCAGACCATAGTGCCC 825
                                                                                                                                                                                                                         886 CICGIGACGGGCTGGGGCTACCACAGCAGCGGGAGAGAAGGAGGAGGAGAAACCGCACC
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Fi153-407 Peroduct: coagulation factor VIIa heavy chain #status experimental <MA2>
Fi153-387 Peroduct: coagulation factor VIIa heavy chain #status experimental <MA2>
Fi153-387 Peroduct: coagulation factor VIIa heavy chain #status experimental coid (Glu) #state Fi6.7.14.16.19.20.25.56.29.34.35 Modified site: carbohydrate (Ser) (covalent) #status experimental Fi52.Phinding site: carbohydrate (Ser) (covalent) #status experimental Fi52.Phinding site: carbohydrate (Asn) (covalent) #status experimental Fi145.2038 Inding site: carbohydrate (Asn) (covalent) #status experimental Fi152.153 (cleavage site: Arg-Ile (coagulation factor XIIa) #status experimental Fi193.442.344 Actitue site: His, Asp, Ser #status predicted Fi193.422.344 Actitue site: Arg-Gly (coagulation factor Xa) #status experimental
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            93 AsnAspAsnGlyGlyCysGluGlnTyrCysGlyAlaAspProGlyAlaGlyArgPheCys 112
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 ATCTGTGACTTCGAGGAGGCCAAGGAATTTTCCAAAATGTGGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAG---GTGAGCTTCCTCAATTGCTCG 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       298 CIGGACAACGGCGGCIGCACGCATTACTGCCTAGAGGAGGTGGGC---TGGCGGCGCTGT 354
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 AlaAsnGlyPheLeuGluGluLeuLeuProGlySerLeuGluArgGluCysArgGluGlu 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGAAGATGACCAGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ---SerLysProGlnGlyArgIleValGlyGlyHisValCysProLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        535 GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         595 GIGCICAICCACCCICCIGGGIGCIGACAGCGGCCCACIGCAIGGAIGAGICCAAG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               73 ProAspGlyPheGluGlyArgAsnCysGluThrAspLysGlnSerGlnLeuIleCysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----AlaSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 AGCCTGTGCGGGCACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                   407
166
64
150
39
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-763-153-1 (1-1245) x KFBO7 (1-407)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
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Db 80 TrplleThrTyrAsnAsp61yAsp61nCysAlaSerAsnPro		20 SerLeuLeuAspThrHisTrpValValSerAlaAlaHisCysPheAspLysLeuSerSer 239 Qy 646 TCCAAGAAGCTCCTTGTCAGGCATGGAGAGTGGCGCTGGGGGAAGTGGGAG Qy 646 TCCAAGAAGCTCCTTGTCAGGCATTGGAGGTTGAGCGTGGGGGGAGAGTGGGAG Db 240 LeuArgAsnLeuThrIleValLeuGlyGluHisAspLeuSerGluHisGluGlyAspGlu 259 Qy 706 CTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCCAACTACAGCAAGAGCACCACCGAC Db 260 GlnValArgHisValAlaGlnLeuIleMetProAspLysTytValProGlyLysThrAsp 279 QY 766 AATGACATGCACCTGCACCTGCCCACCCCCACCCTCTCGCAGACCATAGTGCC 825 Db 280 HisAspIleAlaLeuLeuArgLeuLeuGlnProAlaAlaLeuThrAsnAsnValValPro 299	Qy 826 ATCTGCCTCCGGACAGCGGCCTTGCAGAGCGCGAGCCCAGGAGACC 885 Db 300 LeuCysLeuProGluArgAsnPheSerGluSerThrLeuAlaThrIleArgPheSer 318 Qy 886 CTCGTGACGGCTGGGGCTACCACAGCAGAGAAGAAGAAGAAGAAGAAGAAGAAGAAGA	1042 371 1102 391 1162
766 AATGACATGGCACTGGCCCAGCCCACCTCTCGCAGACCATAGTGCCC 825 ::: :: :	1050 334 1110 354 1170 374	#text_change 12-Feb-1999 ajchman, M.A. ncoding rabbit coagulation factor VII 3365	:9266294; PID:9266295 K; EGF homology; Gla domain homology; trypsin homology < <gla> 2> <try> Length: 443 Matches: 168 Conservative: 67 Mismatches: 145 Indels: 145 Indels: 12 Indels: 12</try></gla>	CCGTCACAGCTGGAGCGGAGTGCATAGAGGAG 60 CCGTCACAGCAGCTGGAGTGCATAGAGGAG 60 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
766 AATGACATCGCACTGCTGCA. ::: :::	AGCAAC	14692. 14692. 14692. 14692. 15. Species: Oryctolagus cuniculus (domestic rabbit) 15. Species: Oryctolagus cuniculus (domestic rabbit) 15. Species: Oryctolagus cuniculus (domestic rabbit) 16. Species: Oryctolagus cuniculus (domestic rabbit) 16. Accession: 146932 17. Trille: Complete nucleotide sequence of the cDNA e A. Reference number: 146932; MUID:93190306; PMID:838 17. Recession: 146932 17. Reference number: Informative nucleotide sequence of the cDNA e A. Reference number: Informative nucleotide sequence of the cDNA e A. Reference number: 146932 17. Refer	Pross references: GB:556300; NID Superfamily: coagulation factor 3 Ps 120 Domain: Gla domain homology F:80-120/Domain: EGF homology <egi) 130-166="" 130-167="" 130-16<="" <egi="" <egi)="" domain:="" egf="" f:130-166="" homology="" ps="" td=""><td>PACTCCTTCCTGGAGGAGG </td></egi)>	PACTCCTTCCTGGAGGAGG

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946 ITCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATG 1005
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1066 TCCGAGGCCGACAGTGGGGGCCCCATGGTCGCTCCTTCCACGCCACCTGGTTCCTGGTG 1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1126 GGCCTGGTGAGCTGGGGTGAGGGCTGTGGGGCTTCACAACTACGGCGTTTACACCAAA 1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    398 CysGlnGlyAspSerGlyGlyProHisValThrGluValGluGlyIleSerPheLeuThr 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  784 CACCTGGCCCAGCCGCCACCCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGACAGC 843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        :::||| ::::||| :::::|||:::|||| ::|||| ::||| :::||| :::||| :::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| :::::||| ::::||| ::::||| :::::||| ::::||| ::::||| ::::||| ::::||| :::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::||| ::::|||
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         730 ITCGICCACCCCAACTACAGCAAGAGCACCACC----GACAATGACAICGCACIGCIG 783
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           271 GlygluHisAsnThrGluLysArgGluHisThrGluGlnLysArgAsnValIleArgThr 290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    192 ASNMetAspTyrGluAsnSerThrGluValGluLysIleLeuAspAsnValThrGlnPro 211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          610 TCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTT 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               670 GGAGAGTATGACCTGCGGCGCTGGGAAAGTGGGAGCTGGACCTGGACATCAAGGAGGTC 729
313 IGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGC-----TGTAGCTGTGCG 363
                                                               134 CysLysGlnPheCys-----LysLeuGlyProAspAsnLysValValCysSerCysThr 151
                                                                                                                                                                         424 GGGAGG------CCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                     172 GlyargValSerValProHisIleSerMetThrArgThrArgAlaGluThrLeuPheSer 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---CCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGGAGACAGCCCCTGG 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         327 ---IleAlaAspArgGluTyrSerAsnIlePheLeuLysPheGlySerGly-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            475 ACAGAAGACCAAGAAGACCAAGTAGAT------
                                                                                                                                      364 CCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            844 GGCCTTGCAGAGCGCGAGCTCAATCAG------
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Nelrod, J.H.; Read, M.S.; Brinkhous, K.M.; Verma, I.M.

DC. Natl. Acad. Sci. U.S.A. 87, 5173-5177, 1990

Title: Phenotypic correction of factor IX deficiency in skin fibroblasts of hemophilic A;Reference number: I46201; MUID:90311364; PMID:2367529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A Molecule type: mRNA

A Molecule type: mRNA

A Residues: 1-452 CAXES.

A; Cross-references: GB:M33826; NID:g163949; PIDN:AAA30844.1; PID:g163950

A; Cross-references: GB:M33826; NID:g163949; PIDN:AAA30844.1; PID:g163950

C; Superfamily: coagulation factor X; EGF homology; Gla domain homology

C; Superfamily: coagulation factor X; EGF homology; Gla domain homology

F; 1-21/Domain: signal sequence #status predicted <SIG>

F; 22-40/Domain: propeptide #status predicted <PRO>

F; 41-452/Product: coagulation factor IX #status predicted <MAT>

F; 41-452/Product: Coagulation factor IX #status predicted <MAT>
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F;218-445/Domain: trypsin homology <TRY>
F;218-445/Domain: trypsin homology <TRY>
F;218-445/Domain: trypsin homology <TRY>
F;246,47,54,56,59,60,65,69,77,75,79/Modified site: gamma-carboxyglutamic acid (Glu) #s
F;57-62,90-101,95-110,112-121,127-138,134-148,150-163,171-326,243-259,373-387,398-426/Di
F;258,306,402/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                Coagulation factor IXa (EC 3.4.21.22) precursor - dog
C; Species: Canis lupus familiaris (dog)
C; Species: Cap-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C; Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C; Accession: A30351; Watzke, H.H.; Ware, J.L.; Stafford, D.W.; High, K.A.
Blood 74, 207-212, 1989
A; Title: Molecular cloning of a cDNA encoding canine factor IX.
A; Reference number: A30351; MUID:8932338; PMID:2752110
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          97 AsnAspGlyValCysLysAspAspIleAsnSerTyrGluCysTrpCysArgAlaGlyPhe 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             253 GAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
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Mismatches:
Indels:
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A; Residues: 1-452 <EVA>
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A:Status: translated from GB/EMBL/DDBJ
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A; Note: 194-Thr was also found
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A; Residues: 30-92 < KOE>
R; Molecule type: DNA
A; Residues: 30-92 < KOE>
R; Molecule type: DNA
A; Residues: 30-92 < KOE>
R; Molecule type: DNA
A; Paritle: Evidence for a prevalent dimorphism in the activation peptide of human coagulat
A; Reference number: A22673; MUID:85190593; PMID:3857619
A; Residues: 1193, T', 195-461 < MCC
A; Cross references: GB:MI1309; NID:9180552; PIDN:AAA52023.1; PID:9180553
A; Molecule type: mRNA
A; Residues: 1193, T', 195-461 < MCC
A; Cross references: GB:MI1309; NID:9180552; PIDN:AAA52023.1; PID:9180553
A; Note: the authors translated the codon ACA for residue 29 as Tyr
R; Jaye, M.; de la Salle, H.; Schamber, F.; Balland, A.; Kohli, V.; Findeli, A.; Tolstosh
A; Note: Locids Res. 11, 235-2335, 1983
A; Title: Isolation of a human anti-heemophilic factor IX cDNA clone using a unique 52-ba
Accession: A2137
Molecule type: mRNA
A; Residues: 1-193, T', 195-461 < JAYA
A; Residues: 1-193, T', JES-461 < JAYA
A; Residues: 1-103, T', JES-46
C; Date: 17-Dec-1982 #sequence_revision 30-Jun-1987 #text_change 15-Sep-2000
C; Accession: A00922; A37570; A30511; A32989; A22673; A21377; A37546; A30623; A60486; A26
B; Costate, S; Schach, B.G; Foster, D.C.; Davie, E.W.; Kurachi, K.
Biochemistry 24, 3736-3750, 1985
A; Title: Nucleotide sequence of the gene for human factor IX (antihemophilic factor B).
A; Reference number: A00922; MUID:86000558; PMID:2994716
A; Recession: A00922
A; Molecule type: DNA
A; Residues: 1-461 <VOS>
A; Molecule type: DNA
A; Residues: 1-461 <VOS>
A; Anson, D.S.; Choo, K.H.; Rees, D.J.G.; Giannelli, F.; Gould, K.; Huddleston, J.A.; BrG
A; Anson, D.S.; Choo, K.H.; Rees, D.J.G.; Giannelli, F.; Gould, K.; Huddleston, J.A.; BrG
A; Title: The gene structure of human anti-haemophilic factor IX.
A; Reference number: A37570; MUID:84236100; PMID:6329734
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R:Koeberl, D.D.; Bottema, C.D.K.; Buerstedde, J.M.; Sommer, S.S.
M. J. Hum. Genet. 45, 448.457, 1989
A/Title: Functionally important regions of the factor IX gene have a low rate of polymor A;Reference number: A32989; MUID:89371752; PMID:2773937
A/Accession: A32989
A/Scatus: not compared with conceptual translation
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A; Rosidues: 1-12, 'S', 14-73, 'P', 75-82, 'K', 84-203, 'P', 205-216, 'G', 218-288, 'A', 299-356, 'A',
A; Residues: 1-12, 'S', 14-73, 'P', 75-82, 'K', 84-203, 'P', 205-216, 'G', 218-288, 'A', 299-356, 'A',
A; Residues: 1-12, 'S', 100136; NID:9182608; PIDN:AAA98726.1; PID:9182609
A; Experimental source: liver
B; Tharakan, J.; Strickland, D.; Burgess, W.; Drohan, W.N.; Clark, D.B.
Vox. Sang. 58, 21-29, 1990
Vox. Sang. 58, 21-29, 1990
A; Title: Development of an immunoaffinity process for factor IX purification.
A; Reference number: A60486; MUID:90194857; PMID:2316207
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Somat. Cell Mol. Genet. 10, 465-473, 1984
A:Title: Isolation and characterization of human factor IX cDNA: identification of Taq
A:Reference number: A37546; MUID:84300526; PMID:6089357
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A; Title: The putative factor IX gene promoter in hemophilia B Leyden.
A; Reference number: A30511; MUID:88327116; PMID:3416069
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A;Residues: 38-193, Tr,195-326 <JAG>
A;Cross-references: GB:M35672
R;Kurachi, K.; Davie, E.W.
Proc. Natl. Acad. Sci. U.S.A. 79, 6461-6464, 1982
A;Title: Isolation and characterization of a cDNA coding for human factor IX.
A;Reference number: A30623; MUID:83065193; PMID:6959130
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Residues: 1-461 <ANS>
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A; Residues: 8-24 <REI>
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A; Molecule type: protein
A; Molecule type: protein
A; Residues: 47-52, Xx, 55-60, Xx, 65 < THA>
A; Residues: 47-52, Xx, 55-60, Xx, 18:siel, W.
B; McMullen, B.A.; Fujikawa, K.; Kisiel, W.
Biochem. Biophys. Res. Commun. 115, 8-14, 1983
A; Title: The occurrence of beta-hydroxyaspartic acid in the vitamin K-dependent blood A; Reference number: A20274; MUID:883308813; PMID:6688526
A; Accession: A20274
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A. Residues: 105-109, X, 111-115 < ANCM>
A. Wolecule type: protein
A. Residues: 105-109, X, 111-115 < ANCM>
R. Balland, A., Faure, T.; Carvallo, D.; Cordier, P.; Ulrich, P.; Fournet, B.; de la S. Bur. J. Bucchem. 172, 565-572, 1988
A. Title: Characterisation of two differently processed forms of human recombinant factor and the constant of the constant solds of the co
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A; Nesteinus: 92-130 <hAN>
A; Nete: NMR detection of calcium binding by domain expressed in recombinant system
B; de la Salle, C.; Charmantier, J.L.; Baas, M.J.; Schwartz, A.; Wiesel, M.L.; Gruneba
A; Title: A deletion located in the 3' non translated part of the factor IX gene responsation: 159612; MUID:94054330; PMID:8236150
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A.Rolecule type: Protein
A.Rolecule type: Protein
A.Rolecule type: Protein
A.Rolecule type: Dougle, X., 206-211;212, 'D', 214, 'X', 216-221, 'D' <AGA>
A.Rolecule the residues designated 'X' were determined to be threonine bound to carbohyd A.Rolecule, R.G.; Kurachi, K.; Davie, E.W.
J. Clin. Invest. 61, 1528-1538, 1978
A.Tille: Activation of human factor IX (Christmas factor).
A.Reference number: A18483; MUID:78194509; PMID:659613
A.Contents: annotation; activation; act
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A Residues: 290-359 <- RE2>
A Residues: 290-359 <- RE2>
A References: GB:M19063; NID:g182622; PIDN:AAA52456.1; PID:g182623
B References: GB:M19063; NID:g182622; PIDN:AAA52456.1; PID:g182623
B References: GB:M19063; NID:g182622; PIDN:AAA52456.1; PID:g182623
B Reference number: A Reference number: A
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J. Biol. Chem. 259, 5698-5704, 1984
A.Title: Derivatives of blood coagulation factor IX contain a high affinity Ca2+-bind
A.Reference number: A37543; MUID:84185715; PMID:6425296
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C; Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology
C; Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology
C; Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutam
C; Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutam
F; 1-20,Domain: signal sequence #status predicted <PSTS
F; 31-91,Domain: propeptide #status experimental <PPT>
F; 31-91,Product: coagulation factor IXa light chain #status experimental <ALC>
F; 97-128/Domain: EGF homology <EGC>
F; 97-128/Domain: EGF homology <EGC>
F; 97-128/Domain: activation peptide #status experimental <ACT>
F; 132-26/Domain: activation peptide #status experimental <AHC>
F; 227-461/Product: coagulation factor IXa heavy chain #status experimental <AHC>
F; 237-461/Product: coagulation factor IXa heavy chain #status experimental
F; 99/Binding site: carbohydrate (Ser) (covalent) #status experimental
F; 99/Binding site: carbohydrate (Asn) (covalent) #status experimental
F; 903,213/Binding site: carbohydrate (Ann) (covalent) #status experimental
F; 203,215/Binding site: carbohydrate (Thr) (covalent) #status experimental
F; 203,215/Binding site: carbohydrate (Thr) (covalent) #status experimental
F; 203,215/Binding site: carbohydrate (Thr) (covalent) #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                            R; Baron, M.; Norman, D.G.; Harvey, T.S.; Hanford, P.A.; Mayhew, M.; Tse, A.G.D.; Brownle submitted to the Brookhaven Protein Data Bank, November 1991
A; Reference number: A51252; PDB:11XA
A; Contents: annotation; conformation by (1)H-NMR, residues 92-130
Note: recombinant form expressed in yeast comment: Factor IX is activated by factor XIa, which excises the activation peptide proment: The gamma-carboxyglutamic acid residues arise by posttranslational, vitamin K comment: Calcium binds to the gamma-carboxyglutamic acid residues acid (Gla) residues and, with stre
                    Rimorita, T.; Isaacs, B.S.; Esmon, C.T.; Johnson, A.E.
J. Biol. Chem. 260, 2583, 1985
A; Reference number: A37544
A; Reference number: A37545; MUID: 86189947; PMID: 3609023
A; Reference number: A37545; MUID: 86189947; PMID: 3609023
                                                                                                                                                                                                                                             A; Contents: annotation; signal sequence cleavage site
R; Suehiro, K.; Kawabata, S. I.; Miyata, T.; Takeya, H.; Takamatsu, J.; Ogata, K.; Kamiya,
J. Biol. Chem. 264, 21257-21265, 1989
A; Title: Blood clotting factor IX B(M) Nagoya: substitution of arginine 180 by tryptopha
A; Reference number: A30622; MUID: 90078229; PMID: 2592373
A; Contents: annotation; sequence of mutant B(M) Nagoya
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Description: catalyzes the proteolytic activation of coagulation factor X in the prese
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           F;226-227/Cleavage site: Arg-Val (coagulation factor XIa) #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     133 GTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCCAGCCTGTGCTGC 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ------ CysLeu 103
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13 CTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGAGAATCTGTGACTTC 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: GDB:119900; OMIM:306900
A;Map position: Xq27.1-Xq27.2
A;Introns: 30/1; 84/2; 93/1; 131/1; 174/1; 241/3; 280/1
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Mismatches:
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A; Contents: annotation; calcium binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.91e-38
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DB:
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1018 TCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGAC 1077
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   411 SerGlyGlyProHisValThrGluValGluGlyThrSerPheLeuThrGlyIleIleSer 430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    371 TyrLeuArgValProLeuValAspArgAlaThrCysLeuArgSerThrLysPheThrIle 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       358 ArgValPheHisLysGlyArgSer------AlaLeuValLeuGln 370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     280 GlyGluHisAsnIleGluGluThrGluHisThrGluGlnLysArgAsnValIleArglle 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       784 CACCTGGCCCAGCCCGCCACCTTTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGC 843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 340 GluTyrThrAsnIlePheLeuLysPheGly-----SerGlyTyrValSerGlyTrpGly 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               904 -----TACCACAGCAGCCGAGAGAAGGAGGCCAAGAAACCGCACCTTCGTCCTCAAC 957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               221 PheasnaspheThrargValValGlyGluaspalaLysProGlyGlnPheProTrp 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              550 CAGGIGGICCIGCIGGACICAAAGAAGAAGCIGGCCIGCGGGCAGIGCICAICCACCCC 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241 Glnvalval---LeuAsnGlyLysValAspAlaPheCysGlyGlySerIleValAsnGlu 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       610 ICCIGGGIGCIGACAGCGGCCCACIGCAIGGAIGAGICCAAGAAGCICCIIGICAGGCII 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 ValSerValSerGlnThrSerLysLeuThrArgAlaGluAlaValPheProAspValAsp 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      201 TyrvalAsnSerThrGluAlaGluThrIleLeuAspAsnIleThrGlnSerThrGlnSer 220
                                                    104 AsnGlyGlySerCysLysAspAspIleAsnSerTyrGluCysTrpCysProPheGlyPhe 123
                                                                                                                                                                             124 GluGiyLysAsnCysGluLeuAspValThr-----CysAsnIleLysAsnGlyArg 140
                                                                                                                                                                                                                                               313 TGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG---CGCTGTAGCTGTGCGCCTGGC 369
                                                                                                                                                                                                                                                                                                             141 CysGluGlnPheCysLysAsnSerAlaAspAsnLysValValCysSerCysThrGluGly 160
                                                                                                                                                                                                                                                                                                                                                                        370 TACAAGCTGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
                                                                                                                                                                                                                                                                                                                                                                                                            471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260 LysTrp11eValThrAlaAlaHisCysValGluThrGlyValLysIleThrValValAla
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                670 GGAGAGIATGACCTGCGGCGCTGGGAGAGTGGGAGCTGGACCTGGACATCAAGGAGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----CCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCCTGG
193 GGGCACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGG
                                                                                                                         253 GAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        430 CCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGA-----
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976 GICCCGCACAATGAGIGCAGCGAGGICATGAGCAACAIGGIGTCTGAGAACAIGCIGIGT 1035
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                    370 TACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1096 GCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGCTGTGGG 1155
                                                                                                                       169 AlaSerIleSerTyrSerSerLysLysIleThrArgAlaGluThrValPheSerAsnMet 188
                                                                                                                                                                                                                                                                               C;Species: Bos primigenius taurus (cattle)
C;Date: 30-Nov-1980 #sequence_revision 03-Aug-1984 #text_change 16-Jul-1999
                                                                                                                                                                                        --TGGAAGCGGATG 444
                                                                                                                                                                                                                                                                                                                            189 AspTyrGluAsnSerThrGluAlaValPheIleGlnAspAspIleThrAspGlyAlaIle 208
                                                                                                                                                                                                                                                                                                                                                                                                        520 AAGATGACCAGGCGGGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAG 579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        580 CIGGCCIGCGGGGAGIGCICAICCACCCCICCIGGGIGCIGACAGCGGCCCACIGCAIG 639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      248 AlaPheCysGlyGlyAlaIleIleAsnGluLySTrpIleValThrAlaAlaHisCysLeu 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   640 GAIGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAG 699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    700 IGGGAGCIGGACCIGGACAICAAGGAGGICTICGICCACCCCAACIACAGCAAGAGCACC 759
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              288 ThrGluGlnArgArgAsnValIleArgThrIleProHisHisGlnTyrAsnAlaThrIle 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        814 ACCATAGTGCCCATCTGCCTCCCGGACAGGGGCCTTGCAGAGCGCGAGCTCAATCAG--- 870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          328 TyrValThrProlleCys------ValAlaAsnArgGluTyrThrAsnIle 342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      343 PheLeuLysPheGlySerGly-----TyrValSerGlyTrpGlyLysValPheAsn 359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               871 --------GCCGGCCAGGAGACCCTCGTGACGGGCTGGGGGCTACCACCAGCAGC 915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        916 CGAGAGAAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATGAATTCCCGTG 975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360 LysGlyArgHisAlaSer-------IleLeuGlnTyrLeuArgValProLeu 374
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             415 ThrGluValGluGlyThrSerPheLeuThrGlyIleIleSerTrpGlyGluGluCysAla 434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               760 ACC-----GACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTTTCGCAG
                                                                                                                                                                                                                                                                                                                                                                            463 CIGAAACGAGACACAGAAGACCAAGAAGACCAAGIAGAI---CCGCGGCTCAIIGAIGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1156 CTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           coagulation factor IXa (EC 3.4.21.22) precursor - bovine N.Alternate names: Christmas factor
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A; Residues: 168-362, Q', 364-387, I', 389-451 <RES>
A; Cross references: GB. Ma2623; NID:9193319; PIDN:AAA37630.1; PID:9193320
C; Comment: This protein plays a critical role in blood coagulation.
C; Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology
C; Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutam
F; 1-16/Domain: propeptide #status predicted <SIG>
F; 1-16/Domain: propeptide #status predicted <RGS>
F; 19-79/Domain: Gla domain homology <GLA>
F; 35-459/Product: coagulation factor IX #status predicted <MAT>
F; 85-116/Domain: EGF homology <EGI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               F;122-158/Domain: EGF homology <EG2>
F;225-452/Domain: trypsin homology <TRY>
F;225-452/Domain: trypsin homology <TRY>
F;41.42,49,51,54,55,60,61,64,67,70,74/Modified site: gamma-carboxyglutamic acid (Glu) #s
F;52-57,85-96,90-105,107-116,122-133,129-143,145-158,166-333,250-266,380-394,405-433/Dis
F;265,313,409/Active site: His, Asp, Ser #status predicted
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Direct sequencing of the activation peptide and the catalytic domain of the A;Reference number: 146580; MUID:90152675; PMID:2303254
A;Accession: 149667
                                                                                                                                      coagulation factor IXa (EC 3.4.21.22) precursor - mouse (fragment)
C;Species: Wus musculus (house mouse)
C;Date: 07-Sep-1990 #sequence_revision 07-Sep-1990 #text_change 16-Jul-1999
C;Accession: JQ0419; 149667
R;Wu, S.M.; Stafford, D.W.; Ware, J.
                                                                                                                                                                                                                                                        Gene 86, 275-278, 1990
A;Title: Deduced amino acid sequence of mouse blood-coagulation factor IX.
A;Reference number: Q00419; MUID:90215309; PMID:2323576
Accession: JQ0419
Clecule type: mRNA
esidues: 1-459 <WUS>
CCIOSS-references: GB:M23109; NID:9193317; PIDN:AAA37629.1; PID:9387158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        73 GAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTCTGGTCCAAGCAC 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    193 GGGCACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGAACTGCCGCAGCGGCTGG 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    253 GAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      133 GTCGACGGTGACCAGTGCTTGGTCTTGCACCTTGGAGCACCCGTGCGCCAGCCTGTGCTGC 192
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    112 GluGlyArgAsnCysGluLeuAspAlaThr-----CysAsnIleLysAsnGlyArg 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           13 CTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAGATCTGTGACTTC 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60 GluGluAlaArgGluValPheGluAsnThrGluLysThrThrGluPheTrpLysGlnTyr 79
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Mismatches:
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Matches:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-763-153-1 (1-1245) x JQ0419 (1-459)
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952 CTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAAC 1011
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              344 SerlleTyrSerHisMetPheCysAlaGlyTyrHisGluGlyGlyLysAspSerCysGln 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    364 GlyAspSerGlyGlyProHisValThrGluValGluGlyThrSerPheLeuThrGlyIle 383
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CIGCACCIGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGAC 840
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                                                                                                                                                                                                   313 TGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG---CGCTGTAGCTGTGCGCCTGGC 369
                                                                                                                                                                                                                                                                                         370 TACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
                                                                                                                                                                                                                                                                                                                        155 AsnTyrGluAsnSerSerGluAlaGluIleIleTrpAspAsnValThrGlnSerAsnGln 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        175 SerPheAspGluPheSerArgValValGlyGlyGluAspAlaGluArgGlyGlnPhePro 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      214 GluLysTrpValValThrAlaAlaHisCysIleLysProGlyValLysIleThrValVal 233
                                                                                                                                                                                                                                              95 CysLysGlnPheCysLysArgAspThrAspAsnLysValValCysSerCysThrAspGly 114
                                                                                                                                                                                                                                                                                                                                                                                    ---TGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                                                                                                            135 ValSerValSerHisIleSerLysLysLeuThrArgAlaGluThrIlePheSerAsnThr 154
                   193 GGGCACGGCACGTGCATCGACGCCATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGG 252
                                                                                                             GAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
                                          58 AsnGlyGlyMetCysLysAspAspIleAsnSerTyrGluCysTrpCysGlnAlaGlyPhe 77
                                                                                                                                                   78 GluGlyThrAsnCysGluLeuAspAlaThr-----CysSerIleLysAsnGlyArg 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAG------ACCCTCGTG
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R; Katayama, K.; Ericsson, L.H.; Enfield, D.L.; Walsh, K.A.; Neurath, H.; Davie, E.W.; Tipracon, Natl. Acad. Sci. U. S.A. 76, 4990-4994, 1979
A; Title: Comparison of amino acid sequence of bovine coagulation factor IX (Christmas fa A; Reference number: A14757; MUID:80056619; PMID:291916
A; Reference number: A14757; MUID:80056619; PMID:291916
A; Recession: A14757
A; Molecule type: protein
A; Residues: 1-63, TT, 65-416 < KAT>
R; McMullen, B.A.; Frujikawa, K.; Kisiel, W.
B; McCession: B20274
A; Molecule type: protein
A; Residues: 59-63, TX, 65-69 < MCM>A; Molecule type: protein
A; Residues: 59-63, TX, 65-69 < MCM>A; Molecule type: protein
A; Residues: 59-63, TX, 65-69 < MCM>A; Molecule type: protein
A; Residues: 19-83, MUID:8320386; PMID:6287289
A; Reference number: I45891; MUID:82272386; PMID:6287289
A; Reference number: I45891; MUID:82272386; PMID:6287289
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A; Title: A new trisaccharide sugar chain linked to a serine residue in bovine blood coa, A; Reference number: A44556; WUID:89213999; PMID:3149637
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               73 GAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTCTGGTCCAAGCAC 132
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Dlecule type: mRNA
esidues: 52-139 <CHO>
Loss references: GB:J00007; NID:g163053; PIDN:AAA30520.1; PID:g163054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13 CTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAGATCTGTGACTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative:
Mismatches:
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714.50
51.64%
34.74%
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Best Local Similarity:
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R;Degen, S.J.F.; MacGillivray, R.T.A.; Davie, E.W.
Biochemistry 22, 2087-2097, 1983
A;Title: Characterization of the complementary deoxyribonucleic acid and gene coding for A;Reference number: A00914; MUID:83231469; PMID:6305407
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A; Residues: 1-2, rRI',5-100 <RES>
A; Cross-references: GB: M33011; NID:g190723; PIDN:AAA60220.1; PID:g190724
A; Cross-references: GB: M33011; NID:g190723; PIDN:AAA60220.1; PID:g190724
C; Comment: Thrombin, which cleaves bonds after Arg and Lys, converts fibrinogen to fibri
C; Comment: Prothrombin is activated on the surface of a phospholipid membrane that binds
ter 314-Arg, are released in natural blood clotting.
C; Comment: The cleavage after Arg·198, observed in vitro, does not occur in plasma.
C; Comment: The gamma-carboxyglutamyl residues bind calcium ions, result from the carboxyglutamyl charged phospholipid membrane surface.
C; Comment: The prothrombin precursor is synthesized in the liver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: protein
A; Residues: 315-334, 'N', 336-348, 'N', 350-368, 'N', 370-397, 'N', 399-413, 'N', 415-484, 'N', 486-8; Rabidues: 315-334, 'N', 336-348, 'N', 350-368, 'N', 370-397, 'N', 399-413, 'N', 415-484, 'N', 486-8; Rabidue: M.J.; Blashill, A.; Furie, B.C.
Reference number: 33751; MUID:87008532; PMID:3759958
Contents: annotation; activation cleavages
Contents: annotation; activation cleavages
Ann. N. Y. Acad. Sci. 485, 73-79, 1386
A:Title: Recombinant genetic approaches to functional mapping of thrombin.
A; Reference number: 151952; MUID:87182874; PMID:3471151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A Molecule type: protein
A.Residues: 44-118, N',120,'S',122-163,'I',165-175,'A',177-182,'T',184-193,'MV',196-308,
A.Residues: 44-118, N',120,'S', Downing, M.R.; Mann, K.G.
J. Blod. Chem. 252, 4942-4957, 1977
A.Title: Primary structure of human prethrombin 2 and alpha-thrombin.
A.Reference number: A37550; MUID:77207112; PMID:873923
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A; Introns: 27/1; 80/3; 89/1; 106/1; 141/2; 187/1; 292/1; 335/1; 377/2; 433/2; 491/2; 552
A; Introns: 27/1; 80/3; 89/1; 106/1; 141/2; 187/1; 292/1; 335/1; 377/2; 433/2; 491/2; 552
C; Superfamily: thrombin; Gla domain homology; kringle homology; trypsin homology
C; Keywords: acute phase; blood coagulation; calcium binding; carboxyglutamic acid; dupli
F; 1-24/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Molecule type: mRNA
A;Residues: 8-163,'N',165-622 <DE2>
A;Cross-references: GB:V00595; GB:J00307; NID:937128; PIDN:CAA23842.1; PID:91335344
                                                                                                                                                                                                                                                                                          Cispecies: Homo sapiens (man)
Cibate: 30-Nov-1980 #sequence_revision 22-Jul-1994 #text_change 08-Dec-2000
Cibate: 30-Nov-1980 #sequence_revision 22-Jul-1994 #text_change 08-Dec-2000
Cibacession: A2931; A00914; B00914; A37549; A37550; I51952
Biochemistry 26, 5165-6177, 1987
Title: Nucleotide sequence of the gene for human prothrombin.
Reference number: A29351; MUID:88077877; PMID:2825773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Walz, D.A.; Hewett Emmett, D.; Seegers, W.H.
Proc. Natl. Acad. Sci. U.S.A. 74, 1969-1972, 1977
A;Reference number: A37549; MUID:77193964; PMID:266717
A;Accession: A37549
                                                                                                                                                                                           thrombin (EC 3.4.21.5) precursor [validated] - human N'Alternate names: coagulation factor II N'Contains: prothrombin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: GDB:119894; OMIM:176930
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1192 CGCTACCTCGACTGGATC 1209
                                          404 ArgTyrValAsnTrplle 409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 188-311 <DE3>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Residues: 1-622 <DEG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Accession: B00914
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                                                                                                                                  RESULT 16
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F;25-43/Domain: propeptide #status predicted <PRO>
F;28-87/Domain: Gla domain homology <GLA>
F;44-622/Product: prothrombin #status experimental <MAT>
F;44-327/Domain: activation peptide #status experimental <APT>
F;108-186/Domain: Aringle homology <KR1>
F;1108-186/Domain: Aringle homology <KR2>
F;23-291/Domain: Aringle homology <KR2>
F;28-363/Product: thrombin light chain #status experimental <LCH>
F;38-4622/Product: thrombin heavy chain #status experimental <HCH>
F;364-612/Product: thrombin homology <TRY>
F;364-612/Domain: trypsin homology <TRY>
F;49,50,57.59,62.63,68,69,72,75/Modified site: gamma-carboxyglutamic acid (Glu) #status F;60-65,90-103,108-186,129-169,157-181,133-291,234-274,262-286/Psisulfide bonds: #status F;3121,143/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;336-482,536-550,564-594/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 ATCIGIGACTICGAGGAGGCCAAGGAAATTITCCAAAAIGIGGAIGACACACIGGCCTIC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    84 TrpAlaLysTyrThrAlaCysGluThrAlaArgThr---ProArgAspLysLeuAlaAla 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 AGCCTGTGCTGCGGGCACGGCACGTGCATCGGCATCGGCAGC----- 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 103 ------CysLeuGluGlyAsnCysAlaGluGlyLeuGlyThrAsnTyrArgGlyHis 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120 ValAsnIleThrArgSerGlyIleGluCysGlnLeuTrpArgSerArgTyrProHisLys 139
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACGAGCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64 ThrCysSerTyrGluGluAlaPheGluAlaLeuGluSerSerThrAlaThrAspValPhe 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----- TGCCGC--- 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   160 ProAspSerSerThrThrGlyProTrpCysTyrThrAspProThrValArgArgGln 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180 GluCysSerIleProValCysGlyGlnAspGlnValThrValAlaMetThrProArgSer 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       200 GluGlySerSerValAsnLeuSerProProLeuGluGlnCysValProAspArgGlyGln 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     220 GlnTyrGlnGlyArgLeuAlaValThrThrHisGlyLeuProCysLeuAlaTrpAlaSer 239
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240 AlaGlnAlaLysAlaLeuSerLysHisGlnAspPheAsnSerAlaValGlnLeuValGlu 259
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                                                                                                                                                                                                                                                                                                                                                                                                                                    F:391-407/Disulfide bonds: #status experimental
F:406.462/Active site: His, Asp #status predicted
F:416/Binding site: carbohydrate (Asn) (covalent) #status experimental
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169
62
161
189
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Mismatches:
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29.09%
24.07%
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Dp	260	::: AsnPheCysArgAsnProAspGlyAspGluGlyValTrpCysTyr 275
οy	364 (CCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTG 411
qq	276	ValAlaGlyLysProGlyAspPheGlyTyrCysAspLeuAsnTyrCysGluGluAlaVal 295
οy	411	411
QQ	296	GluGluGluThrGlyAspGlyLeuAspGluAspSerAspArgAlaIleGluGlyArgThr 315
οy	412	420
Dp	316	AlaThrSerGluTyrGlnThrPhePheAsnProArgThrPheGlySerGlyGluAlaAsp 335
οy	421	_
QQ	336	C.
ò	478	<pre>GAAGACCAAGAAGACCAAGTAGATCGGGGCTCATTGATGGGAAGATGACCAGGCGGGGA 537 </pre>
	538	GACAGCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGCTGGCCTGCGGGGCA 594
Dp	374	
δý	595	GTGCTCATCCACCCTCCTGGGTGCTGACAGCGCCCACTGCATG 639
qq	394	SerLeulleSerAspArgTrpValLeuThrAlaAlaHisCysLeuLeuTyrProProTrp 413
Qy	640	GATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGGGGGC 690
Dp	414	4
δŏ	691	TGGGAGAGATGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTAC 747
QQ	m.	9 0
r g	4 4	AGCAAGAGCACCACCACAATGACATCGCACTGCTGCACCTGGGCCGGGGGGGG
g	454	
δy	805	
οg	474	4 ,
δλ	865	AATCAGGCCGGCCAGGAGCCTCGTGACGGGCTGGGGCTACCACAGCAGCGAGAG 921
Dp	493	Ŋ
2	922	AAGGAGGCCAAGAAACCGCACCTTCGTCTTCAACTTCATCAGTTCCCGTGGTCCCG 98
	513	AlaAsnValGlyLysGlyGlnProSerValLeuGlnValValAsnLeuProIleValGlu 532
δ	982	CACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGC 1
QQ	533	
ΟŊ	1042	ATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGCCATG
QQ	553	TyrLysProAspGluGlyLysArgGlyAspAlaCysGluGlyAspSerGlyGlyProPhe 572
δy	1093	
q	573	ValMetLysSerProPheAsnArgTrp!yrGinMetGiylieValSeriipGiyGid 372
δλ	4	GGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGG 1206
Q	593	GlyCysAspArgAspGlyLySTyrGlyPneTyFinFHisValFneArgLeuLySLyS11F or
ΟŊ	1207	ATC 1209

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PRESULE 13.5 precursor - bovine
through (pc 3.4.21.5) precursor - bovine
through (pc 3.4.21.5) precursor - bovine
through (pc 3.4.21.5) precursor - bovine
c)species as a plaingenius tariars (cottle) u. 1994 steat.—change 18-Jun-1999
c)species and species and
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RESULT 18
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F;44-199/Domain: activation peptide 1 #status experimental <FR1>
F:109-187/Domain: kringle homology <KR1>
F:200-317/Domain: activation peptide 2 #status experimental <FR2>
F:214-292/Domain: kringle homology <KR2>
F:214-292/Domain: kringle homology <KR2>
F:318-366/Product: thrombin light chain #status experimental <LCH>
F:367-E25/Product: thrombin heavy chain #status experimental <HCH>
F:367-E35/Product: thrombin heavy chain #status experimental <HCH>
F:367-E35/S1,58,60,63,64,69,70,73,76/Modified site: gama-carboxyglutamic acid (Glu) #status
F:50,51,58,60,63,64,69,70,73,76/Modified site: gama-carboxyglutamic acid (Glu) #status
F:10-104,109-187,130-170,158-182,214-292,235-275,263-287,339-485,394-410,539-553,5
F:409,465,571/Active site: His, Asp, Ser #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                             70 ITCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACTGGCCTTCTGGTCCAAG 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 130 CACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCCAGCCTGTGC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 88 TyrThrAlaCysGluSerAla------ArgAsnProArgGluLysLeuAsn 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      190 ---TGCGGGCACGGCACGTGCATCGACGGCATC-------GGCAGCTTCAGC 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  232 IGCGACIGCCGCAGCGGC------ 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123 Val---ThrargSerGlyIleGluCysGlnLeuTrpArgSerArgTyrProHisLysPro 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    268 ------CAGCGCGAG 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      310 GGCTGCACG----- 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----- 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  142 GlulleAsnSerThrThrHisProGlyAlaAspLeuArgGluAsnPheCysArgAsnPro 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    162 AspGlySerIleThrGlyProTrpCysTyrThrThrSerProThrLeuArgArgGluGlu 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----AACGGC 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182 CysSerValProValCysGlyGlnAspArgValThrValGluValIleProArgSerGly 201
                                                                                                                                                                                                                                                                                                                                                                            10 ITCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAGATCTGTGAC 69
                                                                                                                                                                                                                                                                                                                                                                                                   68 ArgGluGluAlaPheGluAlaLeuGluSerLeuSerAlaThrAspAlaPheTrpAlaLys 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      202 GlyserthrThrSerGlnSerProLeuLeuGluThrCysValProAspArgGlyArgGlu 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       222 TyrArgGlyArgLeuAlaValThrThrSerGlySerArgCysLeuAlaTrpSerSerGlu 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242 GlnAlaLysAlaLeuSerLysAspGlnAspPheAsnProAlaValProLeuAlaGluAsn 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             322 TACTGCCTA------GAGGAGGTGGCTGGCGGCGCCTGTAGCTGTGCGCCT 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              367 GGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTG------411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----CAT 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            262 PheCysArgAsnProAspGlyAspGluGluGlyAlaTrpCysTyrValAlaAspGlnPro 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              282 GlyAspPheGluTyrCysAspLeuAsnTyrCysGluGluProValAspGlyAspLeuGly 301
                                                                                                                                                                                                                                   625
168
62
152
205
                                                                                                                                                                                                                                                                   Conservative:
                                                                                                                                                                                                                                                                                   Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      277 GTGAGCTTCCTCAATTGCTCGCTGGAC------
                                                                                                                                                                                                                                 Length:
Matches:
                                                                                                                                                                                                                                                                                                     Indels:
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412 ------AAGTTCCCTTGTGGG--- 426
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                                                   302 AspArgLeuGlyGluAspProAspProAspAlaAlaIleGluGlyArgThrSerGluAsp 321
                                                                                                                                                                322 HisPheGlnProPhePheAsnGluLysThrPheGlyAlaGlyGluAlaAspCysGlyLeu 341
                                                                                                                                                                                                                         427 AGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACACAGAAGACCAA 486
                                                                                                                                                                                                                                                                                   342 ArgPro-----LeuPheGluLysLysGlnValGlnAspGlnThrGluLysGluLeuPhe 359
                                                                                                                                                                                                                                                                                                                                                                                                360 GluSerTyrIleGluGlyArgIleValGluGlyGlnAspAlaGluValGlyLeuSerPro 379
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                                                                                                                                                                                                                                                                                                                                                                                                                                                      547 IGGCAGGIGGTCCTGCTG---GACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATC 603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ---GATGAGICC 648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             400 SerAspArgTrpValLeuThrAlaAlaHisCysLeuLeuTyrProProTrpAspLysAsn 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      649 ----AAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAG--- 696
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         697 AAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCCAACTACAGC---AAG 753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              754 AGCACCACCGACAATGACATCGCACTGCTGCCCTGGCCCAGCCCGCCACCTTTCGCAG 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     460 GluAsnLeuAspArgAspIleAlaLeuLeuLysLeuLysArgProIleGluLeuSerAsp 479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      874 GGCCAGGAGACCCTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAAGGAGGAGCCAAG 933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       510 ArgArgGluThrTrpThrThrSerValAlaGluValGlnProSerValLeuGlnValVal 529
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       550 AsnMetPheCysAlaGlyTyrLysProGlyGluGlyLysArgGlyAspAlaCysGluGly 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               570 AspSerGlyGlyProPheValMetLysSerProTyrAsnAsnArgTrpTyrGlnMetCly 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487 GAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |||
| 499 GlyPheLysGlyArgvalThrGlyTrpGly-------Asn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      604 CACCCTCCTGGGTGCTGACAGCGGCCCACTGCATG-----
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C; Species: Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1189 AGCCGCTACCTCGACTGGATC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             610 PheArgLeuLysLysTrpIle
411
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967 ATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAAC 1026
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   916 CGAGAG-----AAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAG 966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ::: ||||||| ::: 505 ArgGluThrThrAsnIleAsnGluIleGlnProSerValLeuGlnValValAsn 524
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 796 CCCGCCACCCTCCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGGGGCCTTGCAGAG 855
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  428 ArgThrArgTyrGluArgAsnValGluLysIleSerMetLeuGluLysIleTyrValHis 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   739 CCCAACTACAGC---AAGAGCACCACCGACAATGACATCGCACTGCTGCTGCACCTGGCCCAG 795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       448 ProargTyrasnTrpArgGluAsnLeuAspArgAspllealaLeuLeuLysLysLys 467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                586 TGCGGGGCAGTGCTCATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATG----- 639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           640 -----GATGAGTCC----AAGAAGCTCCTTGTCAGGCTTGGAGAGTATGAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               408 ProproTrpAspLysAsnPheThrGluAsnAspLeuLeuValArgileGLyLysHisSer 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  682 CIGCGGCGCTGGGAGAAG---TGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCAC 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  312 ThrThrAspAlaGluPheHisThrPhePheAsnGluLysThrPheGlyLeuGlyGluAla 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCTTGTGGG----AGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             475 ACAGAAGACCAA-----GAAGACCAAGTAGATCCGCGCTCATTGATGGGAAGATGACC 528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 348 ThrGluLysGluLeuLeuAspSerTyrIleAspGlyArgIleValGluGlyTrpAspAla 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          340 GGCTGGCGGCGCTGTAGCTGTGCGCCTACAAGCTGGGGGACGACCTCCTGCAGTGT 399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    298 Gly-------GluGluAsnTyrAspValAspGluSerIleAlaGlyArg 311
                                                                                                                                                                                                                                                                            224 GlnGlyAsnLeuAlaValThrThrLeuGlySerProCysLeuProTrpAsnSerLeuPro 243
                                                                                                                                                                                                                                                                                                                                                                                              244 AlaLysThrLeuSerLysTyrGlnAspPheAspProGluValLysLeuValGluAsnPhe 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                        238 TGCCGCAGC---GCCTGG-----GAGGGCCGCTTCTGCCAG------CGCGAGGTG 279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            284 AspPheGluTyrCysAsnLeu-------AsnTyrCysGluGluAlaVal 297
                                             184 ValProValCysGlyGlnGluGlyArgThrThrValValWatThrProArgSerGlyGly 203
                                                                                                    ----- GGCACGTGCATCGACGCATCGC----- 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            280 AGCTICCICAAIIGCICGCIGGACAACGGCGGCIGCACGCAITACIGCCIAGAGGAGGIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      332 AspCysGlyLeuArgPro----LeuPheGluLysLys-----SerLeuLysAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           529 AGGCGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---GACTCAAAGAAGAAGCTGGCC
                                                                                                                                                           204 SerLysAspAsnLeuSerProProLeuGlyGlnCysLeuThrGluArgGlyArgLeuTyr
                                                                                                                                                                                                                                                                                                                                                400 CACCCCCCAGTGAAGTTC--------
   181 AGCCTGTGCTGCGGGCAC--
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A; Molecule type: mRNA
B; MID: 1557383
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       F;361-610/Domain: trypsin homology <TRY>
F;50,51,58,60,63,64,69,70,73,76/Modified site: gamma-carboxyglutamic acid (Glu) #status
F;61-66,91-104,109-187,130-170,158-182,215-293,236-276,264-288,333-479,388-404,533-547,5
F;403,459,565/Active site: His, Asp, Ser #status predicted
C; Date: 14-Dec-1990 #sequence_revision 14-Dec-1990 #text_change 03-May-2002
C; Accession: A35827; A42696; S12081
R; Degen, S.J.F.; Schaefer, L.A.; Jamison, C.S.; Grant, S.G.; Fitzgibbon, J.J.; Pai, J.A.DNA Cell Biol. 9, 487-498, 1990
A; Title: Characterization of the CDNA coding for mouse prothrombin and localization of the Reference number: A35827; MUID:9102551; PMID:2222810
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        164 SerThrThrGlyProTrpCysTyrThrThrAspProThrValArgArgGluGluCysSer 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----1GCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----- 135
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        124 ThrHisThrGlyIleGlnCysGlnLeuTrpArgSerArgTyrProHisLysProGluIle 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCAACTCC - - - TTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  44 AlaAsnSerGlyPheLeuGluGluLeuArgLySGlyAsnLeuGluArgGluCySValGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GluGlnCysSerTyrGluGluAlaPheGluAlaLeuGluSerProGlnAspThrAspVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     F:14-618/Product: prothrombin B #status predicted <WAT>F:109-187/Domain: kringle homology <KR1>F:215-293/Domain: kringle homology <KR2>
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Matches:
Conservative:
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Indels:
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Best Local Similarity:
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GAGATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCC 117
                                                                                                                                                                                                                   84 PhelipalalysTyrThrValCysAspSerValArgLysProArgGluThrPheMetAsp 103
                                                                                                                                                                                                                                                                                                                                                         104 CysieuGluGlyArgCysAlaMetAspLeuGlyLeuAsnTyrHisGlyAsnValSerVal 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                   124 ThrHisThrGlyIleGluCysGlnLeuTrpArgSerArgTyrProHisArgProAspIle 143
                                                         44 AlaAsnSerGlyPheLeuGluGluLeuArgLysGlyAsnLeuGluArgGluCysValGlu 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          144 AsnSerThrThrHisProGlyAlaAspLeuLysGluAsnPheCysArgAsnProAspSer 163
                                  1 GCCAACICC----TICCIGGAGGAGCICCGICACAGCAGCCIGGAGCGGGAGIGCAIAGAG 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  164 SerThrSerGlyProTrpCysTyrThrThrAspProThrValArgArgGluGluCysSer 183
                                                                                                                                                       244 -----AGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGC 294
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  224 GlnGlyAsnLeuAlaValThrThrLeuGlySerProCysLeuAlaTrpAspSerLeuPro 243
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           325 TGCCTA-----GAGGAGGTGGGCTGGCGGCGCTGTAGCTGTGCGCCTGGC 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        264 CysargasnProaspargaspGluGluGlyAlaTrpCysPheValAlaGlnGlnProGly 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 284 PheGluTyr---CysSerLeuAsnTyrCysAspGluAlaValGlyGluGluAsnHisAsp 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             303 GlyAspGluSerIleAlaGlyArgThrThrAspAlaGluPheHisThrPhePheAspGlu 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          412 ------AAGTTCCCTTGTGGG---AGGCCCTGGAAGCGGATGGAGAG 450
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      451 AAGCGCAGTCACCTGAAACGAGACACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTC 510
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                511 ATTGATGGGAAGATGACCAGGGGGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---GAC 567
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C. Species: Rattus norvegicus (Norway rat)
C. Species: Rattus norvegicus (Norway rat)
C. Species: Rattus norvegicus (Norway rat)
C. Species: Bio511, 466576; B42696
R. Dihanich, M.; Monard, D.
C. Accession: Si0511, 466576; B42696
R. Dihanich, M.; Monard, D.
R. Dihanich, M.; Monard, D.
R. Mucleic Acids Res. 18, 4251, 1990
A; Title: cDAA sequence of rat prothrombin.
A; Reference number: S10511; MUID: 90332426; PMID: 2377469
A; Reference number: S10511; MUID: 90332426; PMID: 2377469
A; Residues: 1-617 < CDH>
A; Residues: 1-617 < CDH>
A; Residues: 1-617 < CDH>
A; Residues: BMBL: X52835; NID: 956969; PIDN: CAAA37017.1; PID: 956970
B; Renrikson, K. P.; Jazafu, E. E.; Greenwood, J. A.; Dickerman, H. W.
B; Renrikson, K. P.; Jazafu, E. E.; Greenwood, J. A.; Dickerman, H. W.
B; Reference number: A60576; MUID: 90091942; PMID: 2293980
A; Residues: 44-58 < Rems
A; Molecule type: protein
A; Residues: 44-58 < Rems
A; Note: the authors purified the proenzyme from the estrogen-stimulated maturing rat ute proc. Natl. Acad. Sci. U.S.A. 89, 2779-2783, 1992
A; Title: Partial characterization of vertebrate prothrombin cDNAs: amplification and sequence number: A42696; MUID: 92212913; PMID: 1557383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C.Superfamily: thrombin; Gla domain homology; kringle homology; trypsin homology
C;Keywords: blood coagulation; calcium binding; carboxyglutamic acid; glycoprotein; hydr
F:1-24/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F;25-43/Domain: propeptide #status predicted <PRO>
F;28-88/Domain: grad domain homology <GLA>
F;28-88/Domain: Gla domain homology <GLA>
F;44-61/Product: prothrombin #status experimental <PMAT>
F;44-61/Product: prothrombin #status experimental <PMAT>
F;215-292/Domain: kringle homology <RR1>
F;315-292/Domain: kringle homology <RR2>
F;360-609/Domain: trypsin homology <RR2>
F;50,51,58,60,63,64,69,70,73,76/Modified site: gamma-carboxyglutamic acid (Glu) #status
F;61-66,91-104,109-187,130-170,158-182,235-236-276,264-287,332-478,387-403,532-546,9
                                                                   1027 ATGCTGTGTGCGGGATC---CTCGGGGAC-----CGGCAGGATGCCTGCGAGGGGGAC 1077
                                                                                                                                                          1078 AGTGGGGGGCCCATGGTC----GCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTG 1131
                                                                                                                                                                                                                                                      1132 GTGAGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGC 1191
:::|||:::||||
525 LeuProlleValGluArgProValCysLysAlaSerThrArgIleArgIleThrAspAsn 544
                                                                                                   565 SerGiyGiyProPheValMetLysSerProPheAsnAsnArgTrpTyrGlnMetGlylle 584
                                                                                                                                                                                                                                                                                 Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                              thrombin (EC 3.4.21.5) precursor - rat
                                                                                                                                                                                                                                                                                                                                             1192 CGCTACCTCGACTGGATC 1209
                                                                                                                                                                                                                                                                                                                                                                                              605 ArgLeuLysArgTrp11e 610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3.57e-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             525.50
40.21%
28.85%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Molecule type: mRNA
Residues: 383-617,'E' <BAN>
Cross-references: GB:M81397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22.49%
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
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628 GCCCACTGCATG------GATGAGTCC-----AAGAAGCTCCTTGTC 663

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F;202-237/Domain: fibronectin type I repeat homology <1Fl>
F;245-278/Domain: EGF homology <EG2>
F;286-367/Domain: kringle homology <KRG>
F;387-407/Product: hepatocyte growth factor activator light chain #status experimenta F;408-655/Product: hepatocyte growth factor activator heavy chain #status experimenta
                                                                                                                                 F;468-641/Domain: trypsin homology <TRY>
F;40.48,290,468,429,546/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;40,48,290,468,188-197,202-230,228-237,245-256,250-267,269-278,286-367,307-349,338
F;164-175,169-186,188-197,202-130,288-237,245-256,250-267,269-278,286-367,307-349,338
F;447,497,598/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               595 GIGCICAICCACCCTCCIGGGIGCIGACAGGGCCCCACIGCAIGGAIGAGICC----- 648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             481 GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541 AGCCCCIGG-----CAGGIGGICCIGCIGGACICAAAGAAGAAGTGGCCIGCGGGGCA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           419 HisProTrpLeuAlaAlaIleTyrIleGlyAspSer------PheCysAlaGly 434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              370 LeuThrArgValGlnLeuSerProAspLeuLeuAlaThrLeuProGluProAlaSerPro 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAGCGCAGTCACCTGAAACGAGACACAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      390 GlyArgGlnAlaCysGlyArgArgHisLysLysArgThrPheLeuArg------ 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     346 ------CGGCGCTGTAGCTGT 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      350 TyrvalvalLysAspSerAlaLeuSerTrpGluTyrCysArgLeuGluAlaCySGluSer 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       310 TrpAsnSerAspLeuLeuTyrGlnGluLeuHisValAspSerValGlyAlaAlaAlaLeu 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  330 LeuGlyLeuGlyProHisAlaTyrCysArgAsnProAspAsnAspGluArgProTrpCys 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            290 AsnGlyThrGlyTyrArgGlyValAlaSerThrSerAlaSerGlyLeuSerCysLeuAla 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    244 AGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGAC 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       271 ProGlyPheAladlyArgLeuCysAsnIleGluProAsp---GluArgCysPheLeuGly 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                253 -----GlyGlyThrCysHisLeuileValAlaThrGlyThrThrValCysAlaCysPro 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                215 AspargTrpAlaArgValArgGlnGlyHisValGluGlnCysGluCysPheGlyGlyArg 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -------GICTIGCCCTIGGAGCACCCGIGCGCCAGCCTGTGC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        235 ThrTrpCysGluGlyThrArgHisThrAlaCysLeuSerSerProCysLeuAsn---- 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            190 TGCGGGCACGGCACGTGC-----ATCGACGCCATCGGCAGCTTCAGCTGCGGACTGCCGC 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     43 CGGGAGIGCATAGAGGAGATCIGTGACTICGAGGAGGCCAAGGAAATTTICCAAAATGTG 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   195 LysaspCysGlyThrGluLysCysPheaspGluThrargTyrGluTyrLeuGluGlyGly 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              310 -----GGCTGCACGCATTACTGCCTA------GAGGAGGTGGGCTGG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            103 GAIGACACACIGGCCITCIGGTCCAAGCACGICGACGGIGACCAGIGCITG------
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                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches:
                                                                                                                                                                                                                                                                                                                    Length:
Matches:
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Best Local Similarity:
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                                                                                                                                                                                                                                                                                                        Alignment Scores:
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A;Description: activates hepatocyte growth factor by specific proteolytic cleavage
A;Description: activates negeneration
C;Superfamily: coagulation factor XII; EGF homology; fibronectin type I repeat homology;
C;Reywords: glycoprotein; hydrolase; Kringle; liver; plasma; serine proteinase
C;Keywords: glycoprotein; hydrolase; kringle; liver; plasma; serine proteinase
F;134,Pomain: signal sequence #status predicted <SIG>
F;108-148/Domain: fibronectin type II repeat homology <1F2>
F;164-197/Domain: EGF homology <EG1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R;MIyazawa, K.; Shimomura, T.; Kitamura, A.; Kondo, J.; Morimoto, Y.; Kitamura, N. J. Biol. Chem. 268, 10024-10028, 1993
Title: Molecular cloning and sequence analysis of the cDNA for a human serine protease oggulation factor XII.
Ference number: A46688; MUID:93252878; PMID:7683665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: DDBJ:D14012; NID:g219680; PIDN:BAA03113.1; PID:g219681
A;Experimental source: liver (mRNA); serum (protein)
A;Note: sequence extracted from NCBI backbone (NCBIN:131227, NCBIP:131228)
A;Note: parts of the sequence, including the amino ends of the heavy and light chains,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  hepatocyte growth factor activator (EC 3.4.21.-) precursor [validated] - human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C;Species: Homo sapiens (man)
C;Date: 21-Sep-1993 #sequence_revision 25-Aug-1995 #text_change 08-Dec-2000
C;Accession: A46688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1114 TGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGC 1173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1009 AACAIGGIGICIGAGAACAIGCIGIGIGGGGCAIC---CICGGGGAC-----CGGCAG 1059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1060 GATGCCTGCGAGGGGGACAGTGGGGGGCCCATGGTC-----GCCTCCTTCCACGGCACC 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     949 GTCCTCAACTTCATCAAGAITCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGC 1008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               538 IleArg1leThrAspAsnMetPheCysAlaGlyPheLysValAsnAspThrLysArgGly 557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        558 AspalaCysGluGlyAspSerGlyGlyProPheValMetLysSerProTyrAsnHisArg 577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                898 IGGGGCTACCACAGCAGCCGAGAG-----AAGGAGGCCAAGAGAAACCGCACTTC 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 500 TrpGly-----AsnLeuArgGluThrTrpThrThrAsnIleAsnGluIleGlnProSer 517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         518 valleuglnValValAsnLeuProIleValGluArgProValCysLysAlaSerThrArg 537
                                                                                                                                                                                                                                                                                                                                                                        461 LeuLeuLysLeuLysLysProValProPheSerAspTyrIleHisProValCysLeuPro 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                      481 AspLysGlnThrVal---ThrSerLeuLeuGlnAlaGlyTyrLysGlyArgValThrGly 499
                                                                                                                                                                                                                                                                                       441 GluLysileTyrileHisProArgTyrAsnTrpArgGluAsnLeuAspArgAspIleAla 460
                                                                                                                                                                                                                                                                                                                                           778 CTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCG 837
                                                                                                                                                                          421 ArgilediyLysHisSerArgThrArgTyrGluArgAsnValGluLysIleSerMetLeu 440
                                                            664 AGGCITGGAGAGIATGACCTGCGGCGCTGGGAGAAG---TGGGAGCTGGACCTGGACATC 720
                                                                                                                                                                                                                                721 AAGGAGGTCTTCGTCCACCCCAACTACAGC---AAGAGCACCACCGACAATGACATCGCA 777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1174 GITTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   598 PheTyrThrHisValPheArgLeuLysArgTrpMet 609
                                                      A)Gene: GDB:HGFAC, HGFA; HGFAP
A)Cross-references: GDB:9954514
A)Map position: 4P16-4P16
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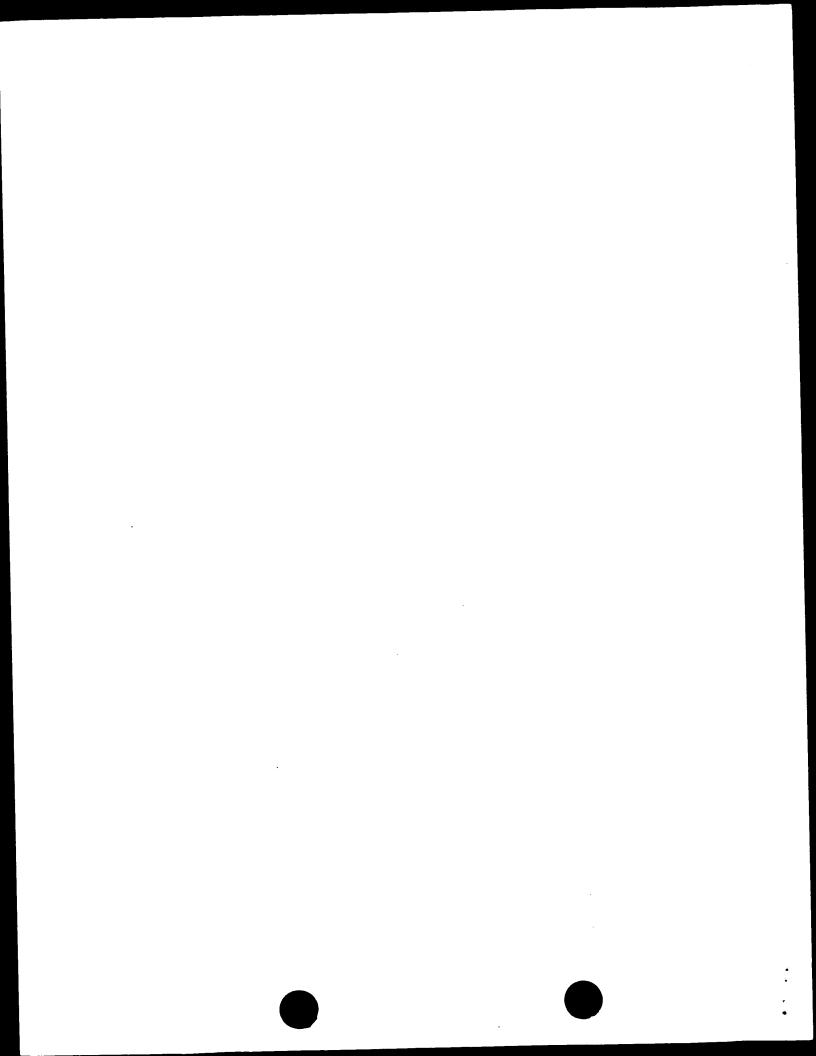
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| 435 SerLeuValHisThrCysTrpValValSerAlaAlaHisCysPheSerHisSerProPro 454
                                    649 ---AAGAAGCICCITGICAGGCITGGAGAGTAIGACCIGGGGCGCGGGGAGAGGGGGG 705
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                                                       455 ArgAspSerValSerValValLeuGlyGlnHisPhePheAsnArgThrThrAspValThr 474
                                                                                       706 CTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAG---AGCACCACC 762
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                                                                                                           475 GlnThrPheGly1leGluLysTyrIleProTyrThrLeuTyrSerValPheAsnProSer 494
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SUMMARIES

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ALIGNMENTS

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MEDLINE-85269639; PubMed-2991859;
Beckmann R.J., Schmidt R.J., Santerre R.F., Plutzky J., Crabtree G.R.,
                            PERC. HUMAN STANDARD; PRT; 461 AA.
P04070; Q16001; Q15190; Q15189;
01-N0V-1986 (Rel. 03, Created)
01-N0V-1986 (Rel. 14, Last annotation update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                                                                                                                                                                Homo sapiens (Human).
Eukaryota: Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Butheria; Primates; Catarrhini; Hominidae; Homo.
NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "The structure and evolution of a 461 amino acid human protein C
                                                                                                                                                                                                                                                                                                         MEDLINE-85270390; PubMed-2991887;
Society D. T. Yoshitake S., Davie E.W.;
"The nuclectide sequence of the gene for human protein C.";
Proc. Natl. Acad. Sci. U.S.A. 82:4673-4677(1985).
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"Protein C deficiency: a database of mutations. For the Protein C & Subcommittee of the Scientific and Standardization Committee of the International Society on Thrombosis and Haemostasis.";
Thromb. Haemost. 69:77-84(1993).
                                                                                                                                                                                                          Rieder M.J., Carrington D.P., Chung M.-W., Lee K.L., Poel C.L., Yi Q.,
NIckerson D.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "The 2.8 A crystal structure of Gla-domainless activated protein C."; EMBO J. 15:6822-6831(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Hereditary thrombophilia: identification of nonsense and missense mutations in the protein C gene."; Proc. Natl. Acad. Sci. U.S.A. 84:2829-2832(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mather T., Oganessyan V., Hof P., Huber R., Foundling S., Esmon C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Miletich J.P., Broze G.J. Jr.;
Beta protein C is not glycosylated at asparagine 329. The rate of translation may influence the frequency of usage at asparagine-X-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=90098906; PubMed=2602169; Grundv C.B., Chitolie A., Talbot S., Bevan D., Kakkar V.V., Grundv C.B., Chitolie A., Talbot S., Bevan D.N.; "Protein C.B., Chodon 1: recurrent mutation at Arg-169 (CGG-->TGG) in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE-94272342; PubMed-8003977; Elsher C.L., Greengard J.S., Griffin J.H.; Models of the serine protease domain of the human antithrombotic plasma factor activated protein C and its zymogen."; Protein Sci. 3:588-599(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VARIANT CYS-444.
MEDLINE-87204221; PubMed-2437584;
ROMEO G., Hassan H.J., Staempfli S., Roncuzzi L., Cianetti L.,
Leonardi A., Viçente V., Mannucci P.M., Bertina R.M., Peschle C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDINE-92184750; PubMed-1544894;
MEDINE-92184750; PubMed-1544894;
Harris R.J. Ling V.T., Spellman M.W.;
Mo-linked fucose is present in the first epidermal growth factor
domain of factor XII but not protein C.";
J. Biol. Chem. 267:5102-5107(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Reitsma P.H., Poort S.R., Bernardi F., Gandrille S., Long G.L., Sala N., Cooper D.N.;
precursor and its messenger RNA, based upon the DNA sequence of
                                                                                                  MEDLINE-86120976; PubMed-3511471; L., Crabtree G.R.; Pluzzky J., Hoskins J.A., Long G.L., Crabtree G.R.; Frolution and organization of the human protein C gene."; Proc. Natl. Acad. Sci. U.S.A. 83:546-550(1986).
                                                                                                                                                                                                                                                                                                                            MEDLINE-84272714; PubMed-6589623; Foster D.C., Davie E.W.; "Characterization of a cDNA coding for human protein C."; Proc. Natl. Acad. Sci. U.S.A. 81:4766-4770(1984).
                                                                                                                                                                                                                                                                   Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS) OF 84-461.
MEDLINE-97157472; PubMed-9003757;
                                         Nucleic Acids Res. 13:5233-5247(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Biol. Chem. 265:11397-11404(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                      CARBOHYDRATE-LINKAGE SITE ASN-371.
MEDLINE~90293094; PubMed=1694179;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=93190290; PubMed=8446940;
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                          cloned human liver cDNAs
                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cysteine sites.";
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Yamamoto K., Matsushita T., Sugiura I., Takamatsu J., Iwasaki E., Wada H., Deguchi K., Shizakawa S., Saito H.; Immozygous protein C deficiency: identification of a novel missense mutation that causes impaired secretion of the mutant protein C."; J. Lab. Clin. Med. 119:682-689(1992).
                                                                   MEDLINE-91329836; PubMed-1868249; Reitsma P.H., Poort S.R., Allaart C.F., Briet E., Bertina R.M.; Reitsma P.H., Poort Gefects in a panel of 40 Dutch families with symptomatic protein C deficiency type I: heterogeneity and founder
                                                                                                                                                                                                                                                                                                                                                                                      Sugahara Y., Miura O., Yuen P., Aoki N.;
"Protein7c deficiency Hong Kong 1 and 2: hereditary protein C
deficiency caused by two mutant alleles, a 5-nucleotide deletion and
a missense mutation.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Grundy C.B., Schulman S., Tengborn L., Kakkar V.V., Cooper D.N.; eTwo different missense mutations at Arg 178 of the protein C (PROC) gene causing recurrent venous thrombosis."; Hum. Genet. 89:685-686(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gandrille S., Alhenc-Glas M., Gaussem P., Aillaud M.-F., Dupuy E., Jufan-Vague I., Alach M.;
"Five novel mutations located in exons III and IX of the protein C gene in patients presenting with defective protein C anticoagulant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS G-14; Q-211; Y-244; Q-253; L-321; C-328; I-385; T-388 AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE-92380660; PubMed-1511988; Grundy C.B., Chisholm M., Kakkar V.V., Cooper D.N.; Anovel homozygous missense mutation in the protein C (PROC) gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Poort S.R., Pabinger-Fasching I., Mannhalter C., Reltsma P.H., Bertina R.M.; Twelve novel and two recurrent mutations in 14 Austrian families
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gandrille S., Vidaud M., Alach M., Alhenc-Gelas M., Fischer A.M., Gouault-Hellman M., Toulon P., Fiessinger J.N., Goossens M.; "Two novel mutations responsible for hereditary type I protein C deficiency: characterization by denaturing gradient gel
                                                                                                                                                                                               VARIANTS ALA-62 (VERMONT-1) AND MET-76.
MEDLINE-92190481; PubMed-1347706;
Boxill, E.G., Tomczak J.A., Grant B., Bhushan F., Pillemer E.,
Rainville I.R., Long G.L.;
                                                                                                                                                                                                                                                                            "Protein CVermont: symptomatic type II protein C deficiency associated with two GLA domain mutations."; Blood 79:1456-1465(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /ARIANTS TRP-38; CYS-42; HIS-42; GLN-271 AND ASN-294.
the protein C gene causing thrombosis.";
Nucleic Acids Res. 17:10513-10513(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  causing recurrent venous thrombosis.";
Hum. Genet. 89:683-684(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=92380661; PubMed=1511989;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=93271391; PubMed=8499565;
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MEDLINE-92276939; PubMed=1593215;
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TARY W. Greengard J.S., Montgomery R.R., McPherson R.A., Fucci J.C., Koerper M.A., Coughlin J., Griffin J.H.;
"Genetic mutations in ten unrelated American patients with symptomatic type 1 protein C deficiency.";
Blood Coagul. Fibrinolysis 4:791-796(1993).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Millar D.S., Grundy C.B., Bignell P., Moffat E.H., Martin R., Kakkar V.V., Cooper D.N., A Gla domain mutation (Arg 15-->Trp) in the protein C (PROC) gene causing type 2 protein C deficiency and recurrent venous thrombosis."
                                                                                                                                                                                                                                                                                                                                                Marchetti G., Patracchini P., Gemmati D., Castaman G., Rodeghiero Wacey A., Cooper D.N., Tuddenham E.G., Bernardi F., "Symptomatic type II protein C deficiency caused by a missense mutation (Gly 381-->Ser) in the substrate-binding pocket.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT
                                                                                                                                                                                        VARIANTS R-145; L-210; W-211; T-243; L-321; M-340 AND Y-426
MEDLINE-94122329; Pubmed-8292730;
                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 43-64 FROM N.A., AND VARIANT GLY-57 (YONAGO).
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Mismatches:
with hereditary protein C deficiency.";
Blood Coagul. Fibrinolysis 4:273-280(1993).
                                                                                                                                               thrombosis.";
Blood Coagul. Fibrinolysis 4:345-347(1993).
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                                                                                                                                                                                                                                                                                                                                                                                                      3r. J. Haematol. 84:285-289(1993).
251
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                                                              MEDLINE=93271396; PubMed=8499568;
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                                                 VARIANT TRP-57
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AspGlnGluAspGlnValAspProArgLeuIleAspGlyLysMetThrArgArgGlyAsp 222
                                                                                                                                            GTCAGGCTTGGAGGAGTATGACCTGCGGCGCTGGGAGAGTGGGAGCTGGACCTGGACATC 720
                                                                                                                                                                                                                                                                     840
                                                                                                    263 ValArgLeuGlyGluTyrAspLeuArgArgTrpGluLysTrpGluLeuAspLeuAspIle 282
                                                                                                                                                                                                      721 AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG 780
                                                                                                                                                                                                                       901 GGCTACCACAGCAGCCGAGAGGAGGAGGCCAAGAAACCGCACCTTCGTCCTCAACTTC 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE-Liver;
Shen L., He X., Dahlback B.;
Submitted (FEB-1996) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VILIA
                                                                                                                                                                                                                                                                                                                       841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGCCCTCGTGACGGGCTGG 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCGGGGGGGCAGTGCTC
                                                                                    ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15-DEC-1998 (Rel. 37, Created)
15-DEC-1998 (Rel. 37, Last sequence update)
15-UNN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                                                                                                                                                                                                                             CTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGAC
                                                                                                                                                                                                                                                                                                                                     Oryctolagus cuniculus (Rabbit).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        443 AsptrpileHisGlyHisIleArgAspLysGluAlaProGlnLys 457
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its modified and this statement is as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                          -1 - GUBDIT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE ENZYME IS THEN ACTIVATED BY THROMEIN, WHICH CLEAVES A TETRADECARPETIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS REACTION, WHICH OCCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLE PROMOTED BY THROMEOMODILIN.

-1. PTH: TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.

-1. PTH: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXILATION OF SOME GLU RESIDUES ALLOWS THE MODIFIED PROFER TO CARDOXILATION OF SOME GLU RESIDUES ALLOWS THE MODIFIED PROFER TO CARDING THE SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT BINDING SITE IS NECESSARY FOR THE RECOGNITION OF THE THROMEIN-THROMEOMODULIN COMPLEX.

-1. SIMILARITY: BELONGS TO PEPTITABSE FAMILY SI.

-1. SIMILARITY: CONTAINS 2 BGF-LIKE DOMAINS.
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PROTEIN C LIGHT CHAIN (BY SIMILARITY).
PROTEIN C HEAVY CHAIN (BY SIMILARITY).
ACTIVATION PEPTIDE (BY SIMILARITY).
CLEAVAGE (BY THROMBIN) (BY SIMILARITY).
                              -!- CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
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IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.
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InterPro; IPR00124; Ser_Lordease_Try.
InterPro; IPR00124; Ser_Lordease_Try.
InterPro; IPR00124; VitK_dep_GLA.
InterPro; IPR001294; VitK_dep_GLA.
InterPro; IPR001294; VitK_dep_GLA.
InterPro; IPR001294; VitK_dep_GLA.
InterPro; IPR001294; VitK_dep_GLA.
InterPro; IPR00189; ITTPSIN; InterPro; InterP
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EGF-LIKE 2.
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InterPro; IPR000561; EGF-like.
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HSSP; P04070; 1PCU.
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421 TGTGGGAGG---CCCTGGAAGGGATGGAGAAGAAGCCCAGTCACCTGAAACGACACA 477
||||||||||
||| CysGlyargLeuGlyTrpLysarglleGluLysLysArgGlyAsnValLysArgAspLeu 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      478 GAA-----GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGG 531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   117 HisGlyGlyTrpGluGlySerPheCysGlnTyrGluValArgPheSerAsnCysSerVal 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 AGCCTGTGCTGCGGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
D75A5F990C8F29D7 CRC64;
                                                                                                              HYDROXYLATION (BY SIMILARITY).
CHARGE RELAY SYSTEM.
CHARGE RELAX SYSTEM.
CHARGE RELAX SYSTEM.
                                                                                                                                                                                                                                                                                          INTERCHAIN (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
                                                                       (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
                                                         GAMMA-CARBOXYGLUTAMIC ACID
GAMMA-CARBOXYGLUTAMIC ACID
                          GAMMA-CARBOXYGLUTAMIC ACID
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Mismatches:
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                                           SIMILARITY)
               BY SIMILARITY
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88.67%
80.96%
80.12%
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Best Local Similarity:
Query Match:
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1134
1141
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2335
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952 CICAACTICAICAAGATICCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAAC 1011
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197 GluGlnValAspGluMetAspGluValAspProArgLeuIleAspGlyLySLeuThrArg 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1132 GTGAGCTGGGGTGAGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGC 1191
                                                                                                  AAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGAC 711
                                                                                                                                                                                             CIGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGAC 771
                                                                                                                                                                                                                                                                                                        ACGGGCTGGGGCTACCACAGCAGCCGAGAGAAGGAGGCCAAGAGAAACCGCACCTTCGTC 951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Porcine factor V: cDNA cloning, gene mapping, three-dimensional protein modeling of membrane binding sites and comparative anatomy of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Grimm D.R., Colter M.B., Braunschweig M., Alexander L.J., Neame P.J.,
Kim H.K.W.;
                          532 CGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGTGGCCTGCGGG
                                         592 GCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-OCT-2001 (Rel. 40, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                                                                                                                                                                                                                  772 ATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCCATCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuAsnPheIleThrValProValAlaProGlnAsnGluCysGluGlnValMetSerAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1072 GGGGACAGIGGGGGGCCCAIGGICGCCICCTICCACGGCACCIGGIICCIGGIGGGCCIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1192 CGCTACCTCGACTGGATCCATGGGCACATCAGAGGAAGCC 1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            437 ArgTyrLeuAspTrpIleHisSerHisIleGluGluLysGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   459 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16-OCT-2001 (Rel. 40, Created)
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                        "SUBUNIT: Synthesized as a single chain precursor, which is cleaved into a light chain and a heavy chain held together by a disulfide bond. The enzyme is then activated by thrombin, which cleaves a tetradecapeptide from the amino end of the heavy chain; this reaction, which occurs at the surface of endothelial cells, is strongly promoted by thrombomodulin.

-I TISSUE SPECIFICITY: Plasma; synthesized in the liver.
-I FPM: The vitamin K-dependent, enzymatic carboxylation of some Glu residues allows the modified protein to bind calcium.

-I MISCELAMBEOUS: Calcium also binds, with stronger affinity to another site, beyond the recognition of the thrombomodulin complex.
            Cell. Mol. Life Sci. 58:148-159(2001).
-!-FUNCTION: Protein C is a vitamin K-dependent serine protease that regulates blood coagulation by inactivating factors Va and VIIIa in the presence of calcium ions and phospholipids.
-!- CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Blood coagulation, Glycoprotein, Serine protease, Gamma-carboxyglutamic acid, Calcium-binding, Vitamin K; Hydroxylation, EGF-like domain; Repeat, Endothelial cell; Hydrolase, Signal.
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                                                                                                                                                                                                                                                                                                                                 -!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
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PRIMIS; PRO0722; CHYMOTRYPSIN.
PRIMIS; PRO0701; GLABLOOD.
SMART; SMO0181; EGF; 2.
SMART; SMO0001; EGF_11ke; 2.
SMART; SMO0000; TYP_SPC; 1.
PROSTIE; PS00010; AS_HYDROXYL; 1.
PROSTIE; PS0108; EGF_1; 1.
PROSTIE; PS01187; EGF_1; 2.
PROSTIE; PS01187; EGF_2; 2.
PROSTIE; PS01187; EGF_2; 1.
PROSTIE; PS001137; TRYPSIN_DOM; 1.
PROSTIE; PS00134; TRYPSIN_DOM; 1.
PROSTIE; PS00134; TRYPSIN_LSE; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001881; EGF_G.
InterPro; IPR001383; GLA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR001254; Ser_protease_Try.
Pfam; PF00009; trypsin; 1.
Pfam; PF00089; trypsin; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                            42 AlaAsnSerPheLeuGluGluLeuArgProSerSerLeuGluArgGluCysLysGluGlu 61
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                                                       GAMMA-CARBOXYGLUTAMIC
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13-AUG-1987 (Rel. 05, Last sequence update)
13-SUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                481 GAC-----CAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGG
                                                                                                                        532 CGGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUBUNIT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE BUXZME IS THEN ACTIVATED BY THROMENIN, WHICH CLEAVES A FERRADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS STRONGLY PROMOTED BY THROMENODOULIN.

TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.

FTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME MISCELLANEOUS: CALCIUM.

MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO ANOTHER SITE, BEYOND THE GLAD DOMAIN. THIS GLA-INDEPENDENT BINDING SITE IS NECESSARY FOR THE RECOGNITION OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Johnson A.E., Esmon C.T.;
"Structural changes required for activation of protein C are induced by Ca2+ binding to a high affinity site that does not contain gamma-carboxyglutamic acid.";
J. Biol. Chem. 258:5554-5560(1983).
-!- FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT REGULATES BLOOD COAGLIATION BY INACTIVATING FACTORS VA AND VIIIA
-!- CATALITIC ACTIVITY: Degradation of blood coagulation factors va
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MEDLINE-83213513; PubMed-6304092;
ESMON N.L., Debault L.E., Esmon C.T.;
"Proteolytic formation and properties of gamma-carboxyglutamic acid-
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
Bovidae; Bovinae; Bos.
                                                                                                                                                                               MEDLINE-85014826; PubMed-6091100;
Long G.L., Balagaje R.M., McGillivray R.T.A.;
"Cloning and sequencing of liver cDNA coding for bovine protein C.
Proc. Natl. Acad. Sci. U.S.A. 81:5653-5656(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-83169769; PubMed-6572939;
Drakenberg T., Fernlund P., Roepstorff P., Stenflo J.;
"Beta-hydroxyaspartic acid in vitamin K-dependent protein C.";
Proc. Natl. Acad. Sci. U.S.A. 80:1802-1806(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE-83007326; PubMed-6896877; Stenflo J., Fernlund P.; "Amino acid sequence of the heavy chain of bovine protein C."; J. Biol. Chem. 257:12180-12190(1982).
                                                                                                                                                                                                                                                                                                                                                              MEDLINE-83007325; PubMed-6896876; Ferning A. Stenfio J.; Annino acid sequence of the light chain of bovine protein C."; J. Biol. Chem. 257:12170-12179(1982).
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SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
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MEDLINE-83213514; PubMed-6406503;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           domainless protein C.";
J. Biol. Chem. 258:5548-5553(1983).
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                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                               NCBI_TaxID=9913;
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EMBL; K02435; AAA30685.1; -.

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Blood coagulation, Glycoprotein, Serine protease;
Gamma-carboxyglutamic acid; Calcium-binding; Vitamin K; Hydroxylation;
EGF-like domain; Repeat; Endothelial cell; Hydrolase; Signal.
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CAAF6833F894C209 CRC64;
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GAMMA-CARBOXYGLUTAMIC A
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GAMMA-CARBOXYGLUTAMIC
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PROTEIN C HEAVY CHAIN.
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CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
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SERINE PROTEASE.
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PROSITE; PS01186; EGF_2; 2.
PROSITE; PS01017; EGF_CA; 1.
PROSITE; PS00011; GLU_CARBOXYLATION; 1.
PROSITE; PS00104; TRYPSIN_LOM; 1.
PROSITE; PS00134; TRYPSIN_HS; FALSE_NEG.
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InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
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SMART; SM00069; GLA; 11.
SMART; SM00001; TYP_SPC; 1.
PROSITE; PS00010; ASX_HYDROXYL; 1.
                            Asx_hydroxyl.
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Pfam; PF00089; trypsin; 1.
Pfam; PF00594; gla; 1.
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InterPro; IPR000561;
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Tue Mar 18 16:19:33 2003

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ProAspSerGlyLeuSerGluArgLysLeuThrGlnValGlyGlnGluThrValValThr 339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GlyTrpGlyTyrArgAsp------GluThrLysArgAsnArgThrPheValLeu 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        220 GlyGluSerProTrpGlnAlaValLeuLeuAspSerLysLysLysLeuValCysGlyAla 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATC 774
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                                                                                                                                                                                                                                                             TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                 241 CGCAGCGCCTGGGAGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                  120 AlaGluGlyTrpGluGlyArgPheCysLeuHisGluValArgPheSerAsnCysSerAla 139
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140 GluAsnGlyGlyCysAlaHisTyrCysMetGluGluGluGlyArgArgHisCysSerCys 159
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180 CysGlyArgLeuGlyLysArgMetGluLysLysArgLysThrLeuLysArgAspThrAsn 199
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                                                                                                                                                                                     60 ValCysGluPheGluGluAlaArgGluIlePheGlnAsnThrGluAspThrMetAlaPhe 79
                                                                                                                                                                                                                                                                                                   TrpSerPheTyrSerAspGlyAspGlnCysGluAspArgProSerGlySerProCysAsp 99
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73
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   Mismatches:
                 Indels:
                                                                          US-09-763-153-1 (1-1245) x PRTC_BOVIN (1-456)
                                     Gaps:
 71.81%
71.03%
   Best Local Similarity:
                   Query Match:
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its mose by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUBDIVIT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE BLYME IS THEN ACTIVATED BY THROMBIN, WHICH CLEAVES A TERADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS REACTION, WHICH COCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLY PROMOTED BY THROMBOMODULIN.
                                                                                                                                       1135 AGCTGGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGC 1194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -1-TISSUE SPECIFICITY: PLASSAA; SYNTHESIZED IN THE LIVER.
-1-PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLU RESIDUES ALLOWS THE MODIFFED PROTEIN TO BIND CALCIUM.
-1-MISCELLANBOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFIRITY TO ANOTHER SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT BINDING SITE IS NECESSARY FOR THE RECOGNITION OF THE
1015 GTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGC 1074
                                                                   GACAGTGGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTG 1134
                                                                                        SerTrpGlyGluGlyCysGlyArgLeuTyrAsnTyrGlyValTyrThrLysValSerArg 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-JUL-1993 (Rel. 26, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 34.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                                                                                                                                                                                 TACCTCGACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCC 1239
                                                                                                                                                                                                                                    THROMBIN-THROMBOMODULIN COMPLEX. SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1. SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
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MEDLINE-92329550; PubMed=1627650;
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                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Rattus norvegicus (Rat).
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PIR; S24312; S24312.
HSSP; P04070; 1PCU.
MEROPS; S01.218; -.
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US-09-763-153-1 (1-1245) x PRTC_RAT (1-461)
       461 AA; 51912 MW;
                                           2.14e-80
1650.50
82.73%
69.30%
                                                                                          Best Local Similarity:
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                                    Alignment Scores:
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                                                                                                         Query Match:
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No.:
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PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS01186; EGF_1; 1.

PROSITE; PS01187; EGF_2; 2.

PROSITE; PS01187; EGF_0A; 1.

PROSITE; PS01187; EGF_0A; 1.

PROSITE; PS001137; TRYPSIN_LDOM; 1.

PROSITE; PS00134; TRYPSIN_LDOM; 1.

PROSITE; PS00135; TRYPSIN_LSR; 1.

PROSITE; PS00135; TRYPSIN_LSR; 1.

PROSITE; PS00135; TRYPSIN_LSR; 1.

PROSITE; PS00136; TRYPSIN_LSR; 1.

PROFEP 33 41 BY SIMILARITY.

PROPEP 33 41 BY SIMILARITY.

PROPEP 33 41 BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTIVATION PEPTIDE (BY SIMILARITY). CLEAVAGE (BY THROMBIN) (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                         PROTEIN C LIGHT CHAIN (BY SIMILARITY). PROTEIN C HEAVY CHAIN (BY SIMILARITY).
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(POTENTIAL).
(POTENTIAL).
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CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
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BY SIMILARITY.

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GAMMA-CARBOXYGLUTAMIC ACID
(BY SIMILARITY).
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GAMMA-CARBOXYGLUTAMIC ACID
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GAMMA-CARBOXYGLUTAMIC ACID
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GAMMA-CARBOXYGLUTAMIC ACID
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GAMMA-CARBOXYGLUTAMIC ACID
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SERINE PROTEASE.
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                                                      InterPro; IPR002383; GLA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR0001294; Vitk_dep_GLA.
Pfam; PF00008; EGF; Pfam; PF00008; trypsin; I.
Pfam; PF00594; gla; I.
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                Chymotrypsin.
EGF-like.
Asx_hydroxyl
                                          EGF_Ca.
GLA_blood.
                                                                                                                                           SMART; SM0017; CALMOTRYPSIN
SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00069; GLA; 1.
SMART; SM00020; Tryp_SPC; 1.
PROSITE; PS00010; ACV.
                                                                                                                                           PRINTS; PR00722; CHYMOTRYPSIN. PRINTS; PR00001; GLABLOOD.
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InterPro; IPR001314;
InterPro; IPR000561;
                                       InterPro; IPR001881;
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|ProGluAspGluGluLeuGluLeuGlyProArgIleValAsnGlyThrLeuThrLysGln 221
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8A4CF93664EDACD5 CRC64;
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Matches:
Conservative:
Mismatches:
Indels:
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Tue Mar 18 16:19:33 2003

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-!- SUBUNT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE ENXXME IS THEN ACTIVATED BY THROMEIN, WHICH CLEAVES A TETRADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS FRACTION, WHICH OCCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLY PROMOTED BY THROMBOMODULIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Nucleotide structure and characterization of the murine gene encoding anticoagulant protein C.";
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"A comparative study of partial primary structures of the catalytic
region of mammalian protein C.";
Br. J. Haematol. 86:590-600(1994).
-I- FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT
REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VILIA
IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.
-I- CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                               1075 GACAGTGGGGGCCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTG 1134
                                                                                                                                                                                                                                                                                                 1135 AGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGC 1194
                                             955 AACTICATCAAGATICCCGIGGICCCGCACAATGAGIGCAGCGAGGICAIGAGCAACAIG 1014
                                                                                                                               1015 GTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGC 1074
                                                                                                                                                  341 GlyTrpGlyTyrGlnSerAspLysValLysAspGlyArgArgArgAsnArgThrPheIleLeu 360
                                                                                      361 ThrPheIleArgIleProLeuAlaAlaArgAsnAspCysMetGlnValMetAsnAsnVal 380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P33587; 035498;
01-FEB-1994 (Rel. 28, Last sequence update)
01-FEB-1994 (Rel. 41, Last annotation update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus
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SEQUENCE OF 274-434 FROM N.A.
STRAIN-BALB/C;
MEDLINE-94318474; PubMed-8043441;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=129/SvJ;
MEDLINE=98152576; Pubmed=9493582;
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Blood coagulation; Glycoprotein; Serine protease;
Gamma-carboxyglutamic acid; Calcium-binding; Vitamin K; Hydroxylation;
EGF-like domain; Repeat; Endothelial cell; Hydrolase; Signal.
-i- TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.
-i- PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLU RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND CALCIUM.
-i- MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO ANOTHER SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROTEIN C LIGHT CHAIN (BY SIMILARITY).
PROTEIN C HEAVY CHAIN (BY SIMILARITY).
ACTIVATION PEPTIDE (BY SIMILARITY).
CLEAVAGE (BY THROMBIN) (BY SIMILARITY).
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                                                                      SITE IS NECESSARY FOR THE RECOGNITION OF THE THROMBIN-THROMBOMODULIN COMPLEX.
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
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SERINE PROTEASE.
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PROSITE: PS01082: EGF_1; 1.
PROSITE: PS01186; EGF_2; 2.
PROSITE: PS01187; EGF_CA: 1.
PROSITE: PS00011; GLU_CARBOXYLATION; 1.
PROSITE: PS00134; TRYPSIN_LOM; 1.
PROSITE: PS00134; TRYPSIN_LIS: 1.
PROSITE: PS00135; TRYPSIN_LIS: 1.
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InterPro; IPR0012383; GLA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                       HSSP, P04070; IPCU.
MEROPS; S01.218; -.
MGD; MGI:97771; Proc.
InterPro; IPR00152; Asx.hydroxyl.
InterPro; IPR001314; Chymotrypsin.
                                                                                                                                                                                                                                                               EMBL; D10445; BAA01235.1; -.
EMBL; AF034569; AAC33795.1; -.
EMBL; D43755; BAA07812.1; -.
PIR; JX0210; JX0210.
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Pfam; PF00008; ETYPSin; 1.
Pfam; PF00089; trypsin; 1.
Prim: PF00594; gla; 1.
PRIMIS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
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SMART; SM00001; EGF_like; 1.
SMART; SM00069; GLA; 1.
SMART; SM00020; Tryp_SPc; 1.
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                                                                                                                                                                                                                                                                                                     (POTENTIAL).
                                                                                                                                                                                                                                                                                          (POTENTIAL)
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                                                                (BY SIMILARITY).
HYDROXYLATION (BY SIMILARITY).
CHARGE RELAY SYSTEM.
                                                                                                                                       BY SIMILARITY.
BY SIM
            (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
                                      (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
 GAMMA-CARBOXYGLUTAMIC ACID
                                                                                                                                                                                                                                                                                                                                                      53FAA0D85B194D6E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                              461
289
57
63
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CHARGE RELAY SYSTEM
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Conservative:
Mismatches:
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                                                                                                                                SIMILARITY.
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1637.50
83.98%
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99
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DISULFID
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MOD_RES
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1075 GACAGTGGGGGCCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTG 1134
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                                                                 260
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MEDLINE=94318474; PubMed=8043441;
MEDLINE=94318474; PubMed=8043441;
Murakam M., Okamura T., Kamura T., Kuroiwa M., Harada M., Niho Y.;
"A comparative study of partial primary structures of the catalytic region of mammalian protein C.";
Br. J. Haematol. 86:590-600(1994).
-I- FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT
201 AspLeuGluAspGluLeuGluProAspProArgIleValAsnGlyThrLeuThrLysGln 220
                                                                                                                                    654
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15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C (EC 3.4.21.69) (Autoprothrombin IIA)
(Anticoagulant protein C) (Blood coagulation factor XIV) (Fragment).
                                                                                                                                                    GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGGTGGGCCTGCGGGGCA
                                                                                                                                  GTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAG
                                                                                                                                                                                                                        CTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTG
                                                                                                                                                                                                                                                                                                              GACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1195 TACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cercopithecinae; Macaca.
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                                                                                                                                                                                                                                                                     994 AGCGAGGTCATGAGCAACATGGTGTTCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGAC 1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1054 CGGCAGGATGCCTGCGAGGGCGACAGTGGGGGCCCCATGGTCGCCTCCTTCCACGGCACC 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   101 SerGluValMetSerAsnMetValSerGluAsnMetLeuCysAlaGlyIleLeuGlyAsp 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       814 ACCATAGTGCCCATCTGCCTCCCGGACAGCGCCCTTGCAGAGCGCGGGGTCAATCAGGCC 873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        874 GGCCAGGAGACCCTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAAGGAGGACCCAAG 933
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      754 AGCACCACCGACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCCTCTCGCAG 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 SerThrThrAspAsnAspIleAlaLeuLeuArgLeuAlaGlnProAlaThrLeuSerGln 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VIIIA
                                     -!- CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Blood coagulation; Glycoprotein; Serine protease; Hydrolase. NON_TER
                                                                         -!- TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27D78F185B2FCC69 CRC64;
                 THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
                                                                                            -!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches:
Indels:
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BY SIMILARITY.
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                                                                                                                                                                                                                                                                                                                                      nicrpro; IPR001254; Ser_protease_Try.
Pfam; PF00089; trypsin; 1.
SMART; SM00020; Tryp_SPC; 1.
PROSITE; PS50240; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_HIS; PARTIAL.
PROSITE; PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17770 MW;
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835.00
98.14%
95.65%
35.73%
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ACT_SITE
DISULFID
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SEQUENCE
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1114 TGGTTCCTGGTGGGCCTGGTGAGCTGGGGCTGTGGGGCTCCTTCACAACTACGGC 1173
                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -!- MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO ANOTHER SITE, BEYOND THE GLA DOMAIN.
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                        15-DEC-1998 (Rel. 37, Created)
15-DEC-1998 (Rel. 37, Last sequence update)
15-UNA-2002 (Rel. 41, Last annotation update)
Coagulation factor X precursor (EC 3.4.21.6) (Stuart factor).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro; IPR001881; EGF_Ca.
InterPro; IPR001283; GIA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; Vitk_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
MEDLINE=97256311; Pubmed=9101642;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pfam; PF00008; EGF; 2.
Pfam; PF00089; trypsin; 1.
Pfam; PF00544; jla. 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00011; GLABLOOD.
SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
                                                                                                                                                                                                                           Oryctolagus cuniculus (Rabbit).
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                                                                                                                                 STANDARD;
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InterPro;
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SMART; SM00069; GLA; 1.

RMART; SM00020; Tryp_SPC; 1.

RMSTT; SM00020; Tryp_SPC; 1.

RMSTT; SM00020; Tryp_SPC; 1.

RMSTT; SM00122: EGF_1; 1.

RMSTTE; PS00118; EGF_2; 2.

RMSTTE; PS01186; EGF_2; 2.

RMSTTE; PS01181; EGF_CA; 1.

RMSTTE; PS00113; TRYPSIN_LOW; 1.

RMSTTE; PS00134; TRYPSIN_LOW; 1.

RMSTTE; PS00135; TRYPSIN_LSER; 1.

RMSTTE; PS00135; TRYPSIN_SER; 1.

RMSTTE; PS00135; TRYPSIN_SER; 1.

RMSTTE; PS00135; TRYPSIN_SER; 1.

RMSTTE; PS00135; TRYPSIN_SER; 1.

RMSTTE; PS00136; TRYPSIN_SER; 1.

RMSTTE; PS00136;
                                                                                                                                                                                                                                                                                                                                                                                                            ACTIVATED FACTOR XA, HEAVY CHAIN.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2.
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HYDROXYLATION (BY SIMILARITY).

CHARGE RELAY SYSTEM.

CHARGE RELAY SYSTEM.

CHARGE RELAY SYSTEM.

CHARGE RELAY SYSTEM.

BY SIMILARITY.

BY SIMIL
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GAMMA-CARBOXYGLUTAMIC ACID (BY
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GAMMA-CARBOXYGLUTAMIC ACID (BY
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Eur. J. Biochem. 218:153-163(1993).
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                            985 AATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATC 1044
                                                                                                                                                   426 ArgaspThrTyrPheValThrGlyIleValSerTrpGlyGluGlyCysAlaArgLysGly 445
                                                                                                                                                                                                      MEDIINE-94062825; Pubmed-8243461;
Inoue K., Morita T.;
Indentification of 0-linked oligosaccharide chains in the activation
peptides of blood coagulation factor X. The role of the carbohydrate
moleties in the activation of factor X.";
    367 GluMetGlyArgLeuSerThr---ThrLeuLySMetLeuGluValProTyrValAspArg 385
                                                       386 AsnSerCysLysArgSerSerSerPheThrIleThrGlnAsnMetPheCysAlaGlyTyr 405
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SEQUENCE OF 1-487 FROM N.A.
MEDLINE-84247315; PubMed=6330671;
Fung M.R., Campbell R.M., McGillivray R.T.A.;
Fung M.R., Campbell R.M., McGillivray R.T.A.;
"Blood coagulation factor X mRNA encodes a single polypeptide chain
"Blood coagulation factor X sequence.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Amino acid sequence of the light chain of bovine factor X1 (Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Enfield D.L., Ericsson L.H., Fujikawa K., Walsh K.A., Neurath H.,
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Titani K., Fujikawa K., Enfield D.L., Ericsson L.H., Walsh K.A.,
                                                                                                                                                                                                                                                                                                                                                             13-AUG-1987 (Rel. 05, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor X precursor (EC 3.4.21.6) (Stuart factor).
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Biochem. Biophys. Res. Commun. 115:8-14(1983).
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-1- FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein that converts prothrombin to thrombin in the presence of factor Va, calcium and phospholipid during blood clotting.
-!- CATALYTIC ACTIVITY: Preferential cleavage: Arg-|-Thr and then Arg-|-Ile bonds in prothrombin to form thrombin.
-!- SUBDUNT: THE THO CHALMS ARE FORMED FROM A SINGLE-CHAIN PRECURSOR BY THE EXCISION OF TWO ARG RESIDUES AND ARE HELD TOGETHER BY I OR
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MEDLINE-91084483; PubMed=2261466;
Selander M., Persson E., Stenflo J., Drakenberg T.;
selander M., Persson E., Stenflo J., Drakenberg T.;
Th NMR assignment and secondary structure of the Ca2(+)-free form of
the amino-terminal epidermal growth factor like domain in coagulation
factor N.";
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                                                                                                                                                                                                                                                                                                                                                            Fujikawa K., Titani K., Davie E.W.; "Activation of bovine factor X (Stuart factor): conversion of factor
                                                                         Neurath H., Davie E.W.; "Bovine factor). Evidence of homology
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                         Titani K., Hermodson M.A., Fujikawa K., Ericsson L.H., Walsh K.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sugo T., Bjoerk I., Holmgren A., Stenflo J.; "Calcium-binding properties of bovine factor X lacking the gamma-carboxyglutamic acid-containing region."; J. Biol. Chem. 259:5705-5710(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRÜCTURE BY NWR OF 41-126.
MEDLINE-96387194; PubMed-8794734;
Sunnerhagen M., Olah G.A., Stenflo J., Forsen S., Drakenberg T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "The relative orientation of Gla and EGF domains in coagulation factor X is altered by Ca2+ binding to the first EGF domain. A combined NMR-small angle X-ray scattering study."; Biochemistry 35:11547-11559(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Morita T., Jackson C.M.; "Localization of the structural difference between bovine blood coagulation factors X1 and X2 to tyrosine 18 in the activation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-92329412; PubMed-1627540;
Ullner M., Selander M., Persson E., Stenflo J., Drakenberg T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Xa-alpha to factor Xa-beta.";
Proc. Natl. Acad. Sci. U.S.A. 72:3359-3363(1975).
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                                                                                                                                                               with mammalian serine proteases."; Biochemistry 11:4899-4903(1972).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=84185716; PubMed=6546930;
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MEDLINE=73053314; PubMed=4264286;
                                                                                                                                                                                                                                                                                                                                  MEDLINE=76053121; PubMed=1059122;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTIVATION.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 1, SALCIUM-BINDING (POTENTIAL).
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2, SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
GAWMA-CARBOXYGLUTAMIC ACID.
GAWMA-CARBOXYGLUTAMIC ACID.
GAWMA-CARBOXYGLUTAMIC ACID.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glycoprotein; Hydrolase; Serine protease; Plasma; Blood coagulation; Gamma-carboxyglutamic acid; Hydroxylation; Calcium-binding; Vitamin K; Signal; Zymogen; BFF-like domain; Repeat; Sulfation; 3D-structure. I POTEWIAL.
                                                                        PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN THE INTRINSIC PATHWAY). OR BY FACTOR VIIA (IN THE EXTRINSIC PATHWAY). MINCELLANBOUGS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO ANOTHER SITE, BEYOND THE GLA DOMAIN.
SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MAY BE REMOVED BUT IS NOT NECESSARY FOR
              PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACTIVATED FACTOR XA, HEAVY CHAIN.
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PIR; A00925; EXBO.
PDB; 1APO; 31-JAN-94.
PDB; 1APO; 31-JAN-94.
PDB; 1WHE; 15-MAY-97.
PDB; 1WHE; 15-MAY-97.
PDB; 1WHE; 15-MAY-97.
MEROPS; SOL.216; -.
GlyCoSuiteDB; P00743; -.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR00125; BGF_2.
InterPro; BS00010; ASX_HYDROXYL; I.
PROSITE; PS00010; ASX_HYDROXYL; I.
PROSITE; PS01187; EGF_2; I.
PROSITE; PS01187; EGF_2; I.
PROSITE; PS011187; EGF_2; I.
PROSITE; PS011187; INTERPRIN_ER; I.
PROSITE; PS00114; TRYPSIN_SER; I.
                                                              PTM: N- AND O-GLYCOSYLATED
 DISULFIDE BONDS
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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GAMMA-CARBOXYGLUTAMIC ACID.
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970 CCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATG 1029
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                                                                                                                                                                                                                                                                                                                                                                                                                422 HisValThrArgPheLysAspThrTyrPheValThrGlyIleValSerTrpGlyGluGly 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   462 AspLysIleMetLysAlaArqAlaGlyAlaAlaGlySerArqGlyHis-----Ser 478
382 ProTyrValAspArgSerThrCysLysLeuSerSerSerPheThrIleThrProAsnMet 401
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P98139; P79224;
01-FEB-1996 (Rel. 33, Created)
15-JUL-1998 (Rel. 36, Last sequence update)
15-JUL-2002 (Rel. 41, Last annotation update)
Coagulation factor VII precursor (EC 3.4.21.21) (Serum prothrombin
                                                                                                                                                                                                                                                                                                                                     402 PheCysAlaGlyTyrAspThrGlnProGluAspAlaCysGlnGlyAspSerGlyGlyPro
                                                                     GAGCGCGAGCTCAATCAGGCCGGCCAGGAGACC---CTCGTGACGGGCTGGGGCTACCAC
                                                                                                                                                                                  910 AGCAGCCGAGAGAAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAGATT
                                                  793 CAGCCCGCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCA
                                                                                                                                                 349 GluAlaThrLeu-----MetThrGlnLysThrGlyIleValSerGlyPheGly----
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Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hydrolase; Serine protease; Blood coagulation; Zymogen; Glycoprotein; Liver; Plasma; Vitemin K; Calcium-binding; Gamma-carboxyglutamic acid; EGF-like domain; Repeat; Signal; Hydroxylation.

1 21 POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FACTOR IXA, OR THROMBIN) (BY SIMILARITY). BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2.
CATALYTIC ACTIVITY: Hydrolyzes one Arg-|-Ile bond in factor X to
                          SUBUNIT: HETERODIMER OF A LIGHT CHAIN AND A HEAVY CHAIN LINKED
                                                                   -!- PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLEAVAGE (BY FACTOR XA, FACTOR XIIA,
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BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FACTOR VII LIGHT CHAIN. FACTOR VII HEAVY CHAIN.
                                                                                             CALCIUM (BY SIMILARITY).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SERINE PROTEASE.
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PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS01186; EGF_2; 1.

PROSITE; PS01186; EGF_2; 1.

PROSITE; PS01181; EGF_CAR.

PROSITE; PS00011; GLU_CARBOXYLATION; 1.

PROSITE; PS00011; GLU_CARBOXILATION; 1.

PROSITE; PS00134; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                      Interpro; IPR000152; Asx_hydroxyl.
Interpro; IPR001314; Chymotrypsin.
Interpro; IPR000561; EGF-11ke.
Interpro; IPR000742; EGF_Ca.
Interpro; IPR001881; EGF_Ca.
Interpro; IPR001881; EGF_Ca.
Interpro; IPR001254; Ser_protease_Try.
Interpro; IPR001254; Ser_protease_Try.
Interpro; IPR001254; VitK_dep_GLA.
Pfam; PF00008; trypsin; 1.
                                       BY A DISULFIDE BOND (BY SIMILARITY). TISSUE SPECIFICITY: PLASMA.
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PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                               EMBL; U77477; AAB37326.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EGF_like; 1.
GLA; 1.
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SMART; SM00001; EGF_like;
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                form factor Xa
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595 GTGCTCATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGATGAG------ 645
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                186 ------SerAsnProGlnGlyArglleValGlyGlyLysValCysProLys 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              535 GGAGACAGCCCTGGCAGGTGGTCCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            415 TICCCTIGIGGGAGCCCTGGAAGCGGAIGGAGAAGAAGCGCAGICACCIGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGGG 534
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 AGCCIGIGCIGCGGGACGGCACGTGCAICGACGCCAICGGCAGCIICAGCIGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     94 -----CysGlnAsnGlyGlySerCysGluAspGlnileGlnSerTyrIleCysPheCys 111
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N-LINKED (GLCNAC. . ) (POTENTIAL).
N-ITHKED (GLCNAC. . ) (POTENTIAL).
                               GAMMA-CARBOXYGLUTAMIC ACID.
GAMMA-CARBOXXGLUTAMIC ACID.
                                                                                                                                                                                                                                 ULUNKED (GLUNAC. . .) (PC 0481ABC4FE5427F8 CRC64;
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostoml; Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
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                                                                                                                                                                                                                                                                                                                                  1042 ATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGACAGTGGGGGGGCCCATGGTCGCCTCC 1101
                                                                                                                                                                                                                                                                                                                                                                                             351 GluGlnSerGluHisLysProGlySerProGluValThrGlyAsnMetPheCysAlaGly 370
                                                                                                                                                                                                                                     937 AACCGCACCITCGICCICAACIICATCAAGAIICCCGIGGICCCGCACAAIGAGIGCAGG 996
                                                                                                                                                                                                                                                             336 ------LeumetAlaileAspValProArgLeumetThrGlnAspCysVal 350
                                                                                                                                                                                                             886 CTCGTGACGGGCTGGGGC-----TACCACAGCAGCGAGAGAAGGAGGCCAAGAGA 936
                                                                                            766 AATGACATGGCACTGCAGCCTGGCCCAGCCGGCCACCTGTCGCAGACCATAGTGCCC 825
                                                                                                          300 LeuCysLeuProGluArgAsnPheSerGluSerThrLeuAlaThrlle---ArgPheSer 318
                                              706 CIGGACCIGGACAICAAGGAGGICTICGICCACCCCAACIACAGCAAGAGCACCACGAC 765
                                                                     260 GlnValArgHisValAlaGlnLeuIleMetProAspLysTyrValProGlyLysThrAsp 279
646 TCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAG 705
            MEDEINE-91257322; PubMed-2044767;
Suzuki H., Harada A., Hayashi Y., Wada K., Asaka J.-I., Gotoh B.,
Ogasawara T., Nagai Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gotoh B., Ogasawara T., Toyoda T., Inocencio N.M., Hamaguchi M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Primary structure of the virus activating protease from chick embryo. Its identity with the blood clotting factor Xa.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAY-1992 (Rel. 22, Created)
01-MAY-1992 (Rel. 22, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
coagulation factor X precursor (EC 3.4.21.6) (Stuart factor)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
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MEDLINE-91065352; PubMed-2174359;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Virus activating protease) (VAP).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 41-55 AND 241-261.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  embryo. Its identity with the FEBS Lett. 283:281-285(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1222 AGAGACAAG 1230
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation. Use by non-profit institute. There are no restrictions on its modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (see http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
           "An endoprotease homologous to the blood clotting factor X as a determinant of viral tropism in chick embryo.";

EMBO '0 9:4189-4195(1990).

-!- FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein that converts prothrombin to thrombin in the presence of factor Va, calcium and phospholipid during blood clotting.

-!- FUNCTION: VAP CLEARES THE FUSION PROTEINS OF SENDAI VIRUS, NDV, SITE, AND PLAYS A KEY ROLE IN THE VIRAL SPREADING IN THE ALLANTOIC
                                                                                                                                                                                      -!- CATALVAIC ACTIVITY: Preferential cleavage: Arg-|-Thr and then Arg-|-ILe bonds in prothrombin to form thrombin.
-!- SUBUNIT: THE TWO CHAINS ARE FORMED FROM A SINGLE-CHAIN PRECURSOR BY THE EXCISION OF TWO ARG RESIDUES AND ARE HELD TOGETHER BY I OR
                                                                                                                                                                                                                                                                                                                                              -!- FTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN THE INTRINSIC PATHWAY), OR BY FACTOR VIIA, (IN THE EXTRINSIC PATHWAY).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROSITE; PS00022; BGF_1; 1.
PROSITE; PS01186; BGF_2; 2.
PROSITE; PS01187; EGF_2; 2.
PROSITE; PS0101187; EGF_24; 1.
PROSITE; PS01013 TRYPEIN_DOM; 1.
PROSITE; PS00134; TRYPEIN_HIS; 1.
Glycoprotein; Hydrolase; Serine protease; Plasma; Blood coagulation; camma-carboxyglutamic acid; Hydroxylation; Calcium-binding; Vitamin K;
                                                                                                                                                                                                                                                         MORE DISULEIDE BOODS.
-1-TISSUE SPECIFICITY: LIVER AND CHORIOALLANTOIC MEMBRANE.
-1-PTM: THE VITAMIN K-DEPRNDENT, ENZYMATIC CARBOXYLATION OF SOME GLOTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACTIVATION PERTIDE.
ACTIVATED FACTOR XA, HEAVY CHAIN.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro; IPR00152; Asx_hydroxyl.
InterPro; IPR00152; Asx_hydroxyl.
InterPro; IPR00134; Chymotrypsin.
InterPro; IPR00184; EGF-1ike.
InterPro; IPR001881; EGF-2.
InterPro; IPR001881; EGF_1I.
InterPro; IPR001383; GLA_blood.
InterPro; IPR001254; Ser_Lordease_Try.
InterPro; IPR001254; Ser_Lordease_Try.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00089; trypsin; 1.
PRINTS; PR00089; trypsin; 1.
PRINTS; PR00072; CHTWOTRYPSIN.
PRINTS; PR00010; EGFBLOOD.
SWART; SW00109; EGFBLOOD.
SWART; SW00069; GLA; 1.
SWART; SW00069; GLA; 1.
PRRET; SW000000; Tryp_SPC; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; D00844; BAA00724.1; -. PIR; S15838; S15838.
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EGF-LIKE 2. SERINE PROFENSE. GAMMA-CAEDOVOCTOR	(BY SIMILARITY). (BY SIMILARITY). (BY MANA-CARDXYCLUTAMIC ACID (BY MILL SIMILARITY).	(DI SIMILARITY). GAMA-CARBOXYGLUTAMIC ACID (BY SIMILARITY).	GAMMA-CARBOXYGLUTAMIC ACID (BY SIMILARITY).		THAME	(BY SIMILARITY) GAMMA-CARBOXYGLITAMIC ACID	SIMILARITY).		SIMILARITY). A-CARBOXYGLUTAMIC	MILARITY). YLATION (BY	RELAY SYSTEM (BY SIMILARITY) RELAY SYSTEM (BY SIMILABITY)	YSTE	SIMILARITY.		BY SIMILARITY. BY SIMILARITY.	TERCHAIN (B		SIMIL	J 3 3	LINKED (GLCNAC) (POTENTIAL) 570BF84956C5C74D CPC64.		47	Matches: 163 Conservative: 84 Mismatches: 147 Indels: 57 Gaps: 6	75)			Q DISTINGUATOR TO TO TO THE COURT		AGTGCTTGGTCTTGCCCTTGAGGAGGAGGAGGAGGAGGAGGAGGAGGAGGAGGAGGA				CTCGCTG 30	•
168 475 46	47		56	09	65	99	69	72	42	103	328	425 101	110	140	167	348 252	283	449	196 207 228	~	0.0	.4e.	54.778 36.148 34.308	x FA10	GGAGGAG	 GluGlu	GAGGCC	 uAla	ACGGT	AspGlyAspGlnC	99	STyrGlyGlyGlnCysLysAs	CGCT	:
125 241 46	47	54	56 59	9	65	99	69	72	79	103	328	06	95 112	129	154	1/5 247	267 396	421	196 207 228	475 AA;	::		.ty: arity:	(1-1245)	CCTTCC		ATCTGTGACTTCGAG	 sSerLysGluG	Ē.	leTyrva]	Grecrecescac	 CysHisTyr	CGCAGCGGCTGGGAGGGC	
DOMAIN DOMAIN MOD_RES	MOD	MOD G		MOD_RES	MOD_RES	MOD_RES	MOD_RES	MOD_RES	MOD_RES	MOD_RES ACT_SITE	ACT_SITE	DISULFID	DISULFID	DISULFID DISULFID	DISULFID	DISULFID	DISULFID	DISULFID	CARBOHYD CARBOHYD CARBOHYD	SEQUENCE	Alignment Scores Pred. No.:		Similari al Simil tch:	-763-153-1	1 GCCAACT	41 AlaAsnS	61 ATCTGTG	61 ArgCysS	121 TGGTCCAAGCAC	pAsr	181 AGCCTGT	95	241 CGCAGCGC	
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958 TTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGGGGTCATGAGCAACATGGTG 1017
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CIGCACCIGGCCCAGCCCGCCACCCICTCGCAGACCATAGIGCCCAICIGCCICCCGGAC 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   352 AlaAspPheAlaAsnGluValLeuMetAsnGln-----LysSerGlyMetValSerGly 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        370 PheGlyArqGluPheGluAlaGlyArgLeuSerLysArg-------LeuLys 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----GAAGACCAAGTAGATCCGCGCCTCATTGATGGGAAGATGACCAGGCGGGAGAC 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |||| :::|||||| ||| ||| s:: |||| |||| valvalGlyGluValvalGlyGluValvalGlyGluValvalAspArgGluLysGluGluHisSerGluThrThrHisThrAla 311
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                                                                                                                                                                                                                                           541 AGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      252 CysProTrpGlnAlaValLeuIleAsnGluLysGlyGluGluPheCysGlyGlyThrIle 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT 660
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                                                                                                                                                                     152 CysSerCysThrSerGlyTyrGluLeuAlaGluAspGlyLysGlnCysValSerLysVal 171
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                                                                                                                                                                                                                                                                                                                                                                                                                                 212 GluGluValPheThrThrThrGluSerProThrProProProArgAsnGlySerSer 231
113 LeuAspGlyTyrGlnGlyLysAsnCysGluPheValIlePro---LysTyrCysLysIle 131
                                                                                       132 AsnAsnGlyAspCysGluGlnPheCysSerIleLysLysSerValGlnLysAspValVal 151
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                                            352 TGTAGCTGTGCGCCTGGCTACAAGCTGGGGACGACCTCCTGCAGTGTCACCCCGCAGTG
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SEQUENCE FROM N.A.
MEDLINE-91216473; Pubmed=1902434;
MESSIGET T.L., Pittman D.D., Long G.L., Kaufman R.J., Church W.R.;
"Cloning and expression in COS-1 cells of a full-length cDNA encoding human coagulation factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 183-234, AND CARBOHYDRATE-LINKAGE SITES.
MEDLINE-94062825; PubMed-8243461;
Inoue K., Morita T.;
"Identification of O-linked oligosaccharide chains in the activation peptides of blood coagulation factor X. The role of the carbohydrate moieties in the activation of factor X.";
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                                                                                                                                           Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                               Leytus S.P., Foster D.C., Kurachi K., Davie E.W.; "Gene for human factor X: a blood coagulation factor whose gene organization is essentially identical with that of factor IX and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE-85216545; Pubmed=2582420; Fund M.R., Hay C.W., McGillivray R.T.A.; Characterization of an almost full-length cDNA coding for human blood coagulation factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       coagulation factor X: evidence for identification of residue 63 beta-hydroxyaspartic acid."; Biochemistry 22:2875-2884(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE-83257207; PubMed-6871167;
McMullen B.A., Fujlkawa K., Kisiel W., Sasagawa T., Howald W.N.,
Kwa E.Y., Weinstein B.;
"Complete amino acid sequence of the light chain of human blood
FAIO_HUMAN STANDARD; PRT; 488 AA.
P00742; Q14340;
21-UUL-1986 (Rel. 01, Created)
01-CCT-1989 (Rel. 12, Last sequence update)
15-UN-2002 (Rel. 41, Last annotation update)
Coagulation factor X precursor (EC 3.4.21.6) (Stuart factor).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Leytus S.P., Chung D.W., Kisiel W., Kurachi K., Davie "Characterization of a cDNA coding for human factor X. Proc. Natl. Acad. Sci. U.S.A. 81:3699-3702(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 115-488 FROM N.A., AND TISSUE SPECIFICITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proc. Natl. Acad. Sci. U.S.A. 82:3591-3595(1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eur. J. Biochem. 218:153-163(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=86221713; PubMed-3011603;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=84222026; PubMed=6587384;
                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=87026600; PubMed=3768336;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Biochemistry 25:5098-5102(1986).
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                                                                                                                                                                                                                                                                                                               Gene 99:291-294(1991).
                                                                                                                               Homo sapiens (Human)
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                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                   NCBI_TaxID=9606;
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                                                                                                                                                                                                                                                                                           **RAY CRYSTALLOGRAPHY (2.3 ANGSTROMS) OF 86-179 AND 235-278.

**MEDLINE-98283982; PubMed-9618463;

**MEDLINE-98283982; PubMed-9618463;

**Amata K., Kawamoto H., Honma T., Iwama T., Kim S.H.;

**Structural basis for chemical inhibition of human blood coagulation factor Xa.";

**Proc. Natl. Acad. Sci. U.S.A. 95:6830-6635(1998).

**C -1- FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein that converts prothrombin to thrombin in the presence of factor Va, calcium and phospholipid during blood clotting.

**C -1- CATALYTIC ACTIVITY: Preferential cleavage: Arg-1-Thr and then Arg-1-ILe bonds in prothrombin to form thrombin.

**Arg-1-ILE bonds in prothrombin to form thrombin.

**INDINIT: THE TWO CHAINS ARE FORMED FROM A SINGLE-CHAIN PRECURSOR BY TWO ARG RESIDUES AND ARE HELD TOGETHER BY 1 OR WARD NATION OF TWO ANG RESIDUES AND ARE HELD TOGETHER BY 1 OR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- PTM: N- AND O-GLYCOSYLATED.
-!- PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN THE INTRINSIC PATHWAY), OR BY FACTOR VIIA (IN THE EXTRINSIC PATHWAY).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                  X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS) OF 86-179 AND 235-278.
MEDLINE-93360277; PubMed-8355279; Tulinsky A., Park C.H., Bode W., Admanabhan K., Padmanabhan K.P., Tulinsky A., Park C.H., Bode W., Huber R., Blankenship D.T., Cardin A.D., Kisiel W.; "Structure of human des(1.45) factor Xa at 2.2-A resolution."; J. Mol. Biol. 232:947-966(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -!- TISSUE SPECIFICITY: Plasma; synthesized in the liver.
-!- PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARROXYLATION OF SOME GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , K03194; AAA52450...

, K03194; AAA52421.1;

, L29433; AAA52764.1;

BL; L00390; AAA52764.1; JOINED.

AAA52764.1; JOINED.

AAA52764.1; JOINED.

AAS2764.1; JOINED.
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InterPro; IPR001314; Chymotrypsin.
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InterPro; IPR0000561; EGF-11ke.
InterPro; IPR000142; EGF_2.
InterPro; IPR001881; EGF_Ca.
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encoding human factor X.";
Gene 84:517-519(1989).
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AAA52764.1;
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Genew; HGNC:3528; F10.
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MEROPS; S01.216; -
GlycoSuiteDB; P00742;
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PDB; 1XKA; 23-MAR-99.
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L00396; 1
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PIR;
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Glycoprotein; Hydrolase; Serine protease; Plasma; Blood coagulation; Gamma-carboxyglutamic acid; Hydroxylation; Calcium-binding; Vitamin K; Signal; Zymogen; EGF-like domain; Repeat; 3D-structure.
                                                                                                                                                                                                                                                                                                                                                                       ACTIVATED FACTOR XA, HEAVY CHAIN.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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GAMMA-CARBOXYGLUTAMIC ACID.
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N-LINKED (GLCNAC. .).
/FTIG-CAR_000013.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
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O-LINKED (GALNAC...).
N-LINKED (GLCNAC...).
                                                                                                                                                                                                                                                                                                                                 FACTOR X LIGHT CHAIN. FACTOR X HEAVY CHAIN.
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Mismatches:
Indels:
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                                                                                                  SMART; SMO0179; EGF_CA; 1.

SMART; SMO0001; EGF_Like; 1.

SMART; SMO00001; EGF_Like; 1.

SMART; SMO00001; TYP_SPC; 1.

PROSITE; PS000010; ASX_HYDROXYL; 1.

PROSITE; PS00022; EGF_1; 1.

PROSITE; PS01187; EGF_2; 2.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS00011; GLF_CARBOXYLATION; 1.

PROSITE; PS00011; GLF_CARBOXYLATION; 1.

PROSITE; PS000134; TRYPSIN_DOM; 1.

PROSITE; PS00134; TRYPSIN_BIS; 1.

PROSITE; PS00134; TRYPSIN_BIS; 1.
InterPro; IPR002383; GLA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; Vitk_dep_GLA.
Pfam; PF00008; EGF; 2.
Pfam; PF00089; trypsin; 1.
Pfam; PF00594; gla; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
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1090 AIGGICGCCICCITCCACGGCACCIGGITCCIGGIGGGCCIGGIGAGCIGGGGIGAGGGC 1149
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Amino acid sequence and posttranslational modifications of human factor VIIa from plasma and transfected baby hamster kidney cells."; Biochemistry 27:7785-7793(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Thim L., Bjoern S., Christensen M., Nicolaisen E.M., Lund-Hansen T., Pedersen A.H., Hedner U.;
                                                                                                     403 PheCysAlaGlyTyrAspThrLysGlnGluAspAlaCysGlnGlyAspSerGlyGlyPro 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FA7_HUMAN STANDARD; PRT; 466 AA.

90709; 014339;
01-JAN-1988 (Rel. 06, Last sequence update)
01-JAN-1988 (Rel. 41, Last sequence update)
Coagulation factor VII precursor (EC 3.4.21.21) (Serum prothrombin conversion accelerator) (Eptacog alfa).
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MEDLINE-87260948; PubMed=3037537;
O'Hara P.J., Grant F.J., Haldeman B.A., Gray C.L., Insley M.Y.,
O'Hara P.J., Murray M.J.;
Hagen F.S., Murray M.J.;
"Nucleotide sequence of the gene coding for human factor VII, a
"Nucleotide sequence of the gene roting in blood coagulation.";
vitamin K-dependent protein participating in blood coagulation.";
Proc. Natl. Acad. Sci. U.S.A. 84:5158-5162(1987).
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Bjoern S., Foster D.C., Thim L., Wiberg F.C., Christensen M.,
Komiyama Y., Pedersen A.H., Kisiel W.;
Komiyama plasma and recombinant factor VII. Characterization of O-
glycosylations at serine residues 52 and 60 and effects of site-
directed mutagenesis of serine 52 to alanine.";
J. Biol. Chem. 266:11051-11057(1991).
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Mammalia; Butheria; Primates; Catarrhini; Hominidae; Homo.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hagen F.S., Gray C.L., O'Hara P.J., Grant F.J., Saari G.C., Woodbury R.G., Hart C.E., Insley M.Y., Kisiel W., Kurachi K.,
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Proc. Natl. Acad. Sci. U.S.A. 83:2412-2416(1986).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              466 AA.
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                                                                                                                                                                                                                                                                                                                                                                                          463 AspargSerMetLysThrargGlyLeuProLys 473
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Alignment Scores:
Pred. No.:
               Iwanaga S., Nishimura H., Kawabata S., Kisiel W., Hase S., Ikenaka T.; "A new trisaccharide sugar chain linked to a serine residue in the first EGF-like domain of clotting factors VII and IX and protein Z."; Adv. Exp. Med. Biol. 281:121-131(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDIINE-22340074; PubMed=1634227;
Marchetti G., Patracchini P., Gemmati D., Derosa V., Pinotti M.,
Rodorigo G., Casonato A., Girolami A., Bernardi F.;
"Detection of two missense mutations and characterization of a repeat
                                                                                                                                                                                                                                                                              MEDLINE=99126538; PubMed-9925787;
Zhang E., St Charles R., Tulinsky A.;
"Structure of extracellular tissue factor complexed with factor VIIa
(Xy12-Glc) O-glycosidically linked to a serine residue in the first epidermal growth factor-like domain of human factors VII and IX and protein Z and bovine protein Z.";

J. Biol. Chem. 264:20320-20325(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          O'Brien D.P., Gale K.M., Anderson J.S., McVey J.H., Miller G.J., Meade T.W., Tuddenham E.G.D.; "Purification and characterization of factor VII 304-Gln: a variant molecule with reduced activity isolated from a clinically unaffected
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-94264305; PubMed-8204879; Chaing S., Clarke B., Sridhara S., Chu K., Friedman P., Vandusen W., Roberts H.R., Blajchman M., Monroe D.M., High K.A.;
                                                                                                                                                              X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS) OF FVIIA IN COMPLEX WITH TF. MEDLINE-96175641; PubMed-8598903;
                                                                                                                                                                                                                                                                   X-RAY CRYSTALLOGRAPHY (2.1 ANGSTROMS) OF FVIIA IN COMPLEX WITH TF.
                                                                                                                                                                                      Banner D.W., D'Arcy A., Chene C., Winkler F.K., Guha A., Konigsberg W.H., Nemreson Y., Kirchhofer D.; "The crystal structure of the complex of blood coagulation factor VIIa with soluble tissue factor.";
                                                                                                                                                                                                                                                                                                                                                                                                               "Solution structure of the N-terminal EGF-like domain from human factor VIT.";
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Marchetti G., Ferrati M., Patracchini P., Redaelli R., Bernardi "A missense mutation (178cys-->Tyr) and two neutral dimorphisms (115His and 33Ser) in the human coagulation factor VII gene.", Hum. Mol. Genet. 2:1055-1056(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Polymorphism (SSCP) analysis in five dysfunctional variants of
                                                                                                                                                                                                                                                                                                                                                                                       Muranyi A., Finn B.E., Gippert G.P., Forsen S., Stenflo J., Drakenberg T.;
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                                                                   STRUCTURE OF CARBOHYDRATE ON SER-112.
                                                                                                                                                                                                                                                                                                                     inhibited with a BPTI mutant.";
J. Mol. Biol. 285:2089-2104(1999).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hum. Mol. Genet. 2:1355-1359(1993).
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MEDLINE-98367502; PubMed-9692950;
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                                                                              MEDLINE=91344709; PubMed=2129367
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MEDLINE=95072589; PubMed=7981691;
Bernardi F., Castaman G., Redaelli R., Pinotti M., Lunghi B.,
Redeghiero F., Marchetti G.;
Redeghiero F., Marchetti G.;
"Topologically equivalent mutations causing dysfunctional coagulation factors VII (294Ala-->Val) and X (334Ser-->Pro).";
Hum. Mol. Genet. 3:1175-1177(1994).
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-1- FUNCTION: CIRCULATES IN THE BLOOD IN A ZYMOGEN FORM. FACTOR VII IS CONVERTED TO FACTOR VIIA BY FACTOR XA, FACTOR XIIA, FACTOR IXA, OR THROMEIN BY MINOR PROTEOLYSIS. IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM IONS, FACTOR VIIA THEN CONVERTS FACTOR X TO FACTOR XA BY LIMITED PROTEOLYSIS. FACTOR VIIA WILL ALSO CONVERT FACTOR IX TO FACTOR IXA IN THE PRESENCE OF TISSUE FACTOR VIOLATION.
"Severe factor VII deficiency caused by mutations abolishing the cleavage site for activation and altering binding to tissue factor."; Blood 83:3524-3535(1994).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                is a common, probably ancient mutation causing factor VII
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Bernardi F., Castaman G., Pinotti M., Ferraresi P., di Iasio M.G.,
Lunghi B., Rodeghiero F., Marchetti G.;
"Mutation pattern in clinically asymptomatic coagulation factor VII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arbini A.A., Mannucci P.M., Bauer K.A.,
"A Thr359Net mutation in factor VII of a patient with a hereditary
deficiency causes defective secretion of the molecule.";
Blood 87:5085-5094(1996).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      UE SPECIFICITY: PLASMA.
THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE-98112461; PubMed-9452082; Alshimavi C., Scerri C., Galdies R., Aquilina A., Felice A.E.; "Two new missense mutations (P134T and A244V) in the coagulation factor VII gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tamary H., Fromovich Y., Shalmon L., Reich Z., Dym O., Lanir N., Brenner B., Paz M., Luder A.S., Blau O., Korostishevsky M., Zaizov R., Seligsohn U.; Robably ancient mutation causing factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALTERNATIVE PRODUCTS: 2 isoforms; A (shown here) and B; are
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-95064662; PubMed-7974346;
Ohiwa M., Hayashi T., Wada H., Minamikawa K., Shirakawa S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VARIANTS W-283; K-325; V-358; Q-364; E-402 AND Q-413.
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Thromb. Haemost. 76:283-291(1996).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                catalytic domain.";
Thromb. Haemost. 71:773-777(1994).
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MEDLINE=97037613; PubMed=8883260;
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                                                                                                                                                                                                                                                                                                                                                                                                                                      VARIANT MIE HIS-307
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                                                                                                                                            VARIANT VAL-354
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DISEASE: DEFECTS IN F7 CAN CAUSE COAGULOPATHY.
PHARMACEUTICAL: Available under the names Niastase or Novoseven (Novo Nordisk). Used for the treatment of bleeding episodes in

466

Length:

1.33e - 34

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946 TTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGGGGAGGTCATG 1005
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CICGIGACGGGCIGGGCTACCACAGAGCAGCGAGAAGGAGGCCAAGAAAACCGCACC 945
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    281 GlnSerArgArgValAlaGlnValIleIleProSerThrTyrValProGlyThrThrAsn 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      766 AATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCC 825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----AAGCICCIIGICAGGCIIGGAGAGIAIGACCIGCGGCGCGCGGGAGAAGIGGGAG 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           595 GIGCICAICCACCCCCCCCTGGGIGCIGACAGGGGCCCCACIGCAIGGAIGAGICCAAG--- 651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241 ThrLeulleAsnThrIleTrpValValSerAlaAlaHisCysPheAspLysIleLysAsn 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      535 GGAGACAGCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGTGGCCTGCGGGGCA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG 534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----SerLysProGlnGlyArglleValGlyGlyLysValCysProLys 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  355 AGCIGIGCGCCTGGCTACAAGCIGGGGGACGACCICCTGCAGTGICACCCCGCAGIGAAG 414
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     133 LeuproalaphedludlyargasnCysGluThrHisLysaspaspGlnLeuIleCysVal 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     298 CTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGC---TGT 354
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 AGCCTGTGCTGCCGGCACGGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      113 SerProCysGlnAsnGlyGlySerCysLysAspGlnLeuGlnSerTyrIleCysPheCys 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAG----CGCGAGGTGAGCTTCCTCAATTGCTCG 297
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                                                                                                                                                                               1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG
                                                                                                                                                                                                                                                                                                193 TyrProCysGlyLys---IleProlleLeuGluLysArgAsnAla----
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                    Conservative:
Mismatches:
Matches:
                                                                      Indels:
                                                                                                                                       US-09-763-153-1 (1-1245) x FA7_HUMAN (1-466)
                      56.74%
38.77%
33.50%
                                                  Best Local Similarity:
                                Percent Similarity:
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MEDLINE-9134709; PubMed-2129367;
MEDLINE-9134709; PubMed-2129367;
Mishimura H., Kawabata S., Kisiel W., Hase S., Ikenaka T.;
Iwanaga S., Nishimura H., Kawabata S., Kisiel W., Hase S., Ikenaka T.;
An extrissccharide sugar chain linked to a serine residue in the
first EGF-like domain of clotting factors VII and IX and protein Z.";
Adv. Exp. Med. Biol. 281:121-131(1990).
Adv. Exp. Med. Biol. 281:121-131(1990).
IN THE BLOOD IN A ZYMOGEN FORM. FACTOR VII S.
CONVERTED TO FACTOR VIIA BY FACTOR XA, FACTOR XIA, FACTOR IXA, OR
AND CALCIUM IONS, FACTOR VIIA THEN CONVERTS FACTOR X TO FACTOR XA
BY LIMITED PROTEOLYSIS. FACTOR VIIA WILL ALSO CONVERT FACTOR X
FACTOR IXA IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=89213999; PubMed=31446537;
Hase S., Kawabata S., Nishimura H., Takeya H., Sueyoshi T.,
Miyata T., Iwanaga S., Takao T., Shimonishi Y., Ikenaka T.;
"A new trisaccharide sugar chain linked to a serine residue in bovine blood coagulation factors VII and IX.";
J. Blochem. 104:867-868(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CATALYTIC ACTIVITY: Hydrolyzes one Arg-|-11e bond in factor X to
                                                                                                                     1111 ACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTAC 1170
                                                                                                                                                                                                                                                             1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
                                               1006 ------AGCAACAIGGIGICTCTGAGAACAIGCTGIGIGGGGCAICCTCGGG 1050
                                                                                                                                        395 GlySerLysAspSerCysLysGlyAspSerGlyGlyProHisAlaThrHisTyrArgGly 414
                                                                                                                                                                                                               375 ArgLysValGlyAspSerProAsnIleThrGluTyrMetPheCysAlaGlyTyrSerAsp 394
||| ::: :::||| :::
355 LeuGluLeuMetValLeuAsnValProArgLeuMetThrGlnAspCysLeuGlnGlnSer 374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUBUNIT: HETERODIMER OF A LIGHT CHAIN AND A HEAVY CHAIN LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (Rel. 19, Last sequence update)
(Rel. 41, Last annotation update)
factor VII (EC 3.4.21.21) (Serum prothrombin conversion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -i - PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bos taurus (Bovine).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Takeya H., Kawabata S., Nakagawa K., Yamamichi Y., Miyata T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 wanaga S.;
Bovine factor VII. Its purification and complete amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRUCTURE OF CARBOHYDRATE ON SER-52.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Biol. Chem. 263:14868-14877(1988)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRUCTURE OF CARBOHYDRATE ON SER-52.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=89008362; PubMed=3049594;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -i- TISSUE SPECIFICITY: PLASMA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-AUG-1991 (Rel. 19, Created)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
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                                                                                                                                                                                                                                                                                                                                                1231 GAAGCCCCC 1239
                                                                                                                                                                                                                                                                                                                                                                                  455 ProArgPro 457
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      accelerator).
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15-JUN-2002 (
Coagulation f
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DR InterPro; IPR00152; Asx_hydroxyl.

DR InterPro; IPR00152; Asx_hydroxyl.

DR InterPro; IPR001512; Asx_hydroxyl.

DR InterPro; IPR001512; Asx_hydroxyl.

DR InterPro; IPR001742; EGF_1ike.

DR InterPro; IPR001743; EGF_1.

DR InterPro; IPR001254; Ser_Drotease_Try.

DR InterPro; IPR001254; Ser_Drotease_Try.

DR InterPro; IPR001254; Vitk_dep_GLA.

DR Pfam; PF000089; EGF_1.

DR Pfam; PF000089; EGF_2.

DR Pfam; PF00001; EGF_0.

DR Pfam; PF00001; EGF_0.

DR Pfam; PF00010; EGF_0.

DR Pfam; PF00010; EGF_0.

DR PRINTS; PR00010; EGF_0.

SMART; SM00109; EGF_0.

DR PRNTS; PR00001; EGF_1ike; 1.

SMART; SM00010; EGF_1ike; 1.

SMART; SM00010; EGF_1ike; 1.

DR SMART; SM00010; EGF_1ike; 1.

SMART; SM00010; EGF_1ike; 1.

PR051TE; PS001010; ASX_HRDXXL., 1.

PR051TE; PS001010; ASX_HRDXXLATION; 1.

PR051TE; PS001013; TRYPSIN_LHS; 1.

PR051TE; PS001013; TRYPSIN_THS; 1.
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EGF-LIKE 2.
SERINE PROTEASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLEAVAGE (BY FACTOR XA, FACTOR XIIA,
 GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FACTOR IXA, OR THROMBIN).
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
SUBSTRATE (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FACTOR VII LIGHT CHAIN. FACTOR VII HEAVY CHAIN.
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N-LINKED (GLCNAC. . .).
                                  -1- SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
-1- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
PIR; A31979; A31979.
MEROPS; S01.215; -.
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121 TGGICCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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133 TyrProCysGlyLys---IleProValLeuGluLysArgAsnGly------- 146
                                                                                                                                                                                                                                                                                                                                            475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG 534
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    N-LINKED (GLCNAC. . .).; 703E1FE0636F7F10 CRC64;
                                                                                    Conservative:
Mismatches:
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                                                          Length:
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203 203 N-407 AA; 44431 MW;
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Alignment Scores:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1111 ACCIGGIICCIGGIGGGCCIGGIGAGCIGGGGIGAGGGCIGIGGGCICCIICACAACIAC 1170
                                                                                                                                                                                             1051 GACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGGCCCATGGTCGCCTCCTTCCACGGC 1110
                                                                                                                             1006 AGCAAC------ATGGTGTCTGAGAACATGCTGTGTGCGGCATCCTCGGG 1050
                                                               946 ITCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATG 1005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CATALYTIC ACTIVITY: Hydrolyzes one Arg-|-Ile bond in factor X to
                                                                                                                                                                                                               315 ArgGlnArgProGlyGlyProValValThrAspAsnMetPheCysAlaGlyTyrSerAsp 334
                         886 CICGIGACGGGCIGGGGCIACCACAGCAGCCGAGAGAAGGAGGCCAAGAGAAACCGCACC 945
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -:- SUBGNIT: HETERODIMER OF A LIGHT CHAIN AND A HEAVY CHAIN LINKED BY A DISULFIDE BOND (BY SIMILARITY).
-:- TISSUE SPECIFICITY: PLASMA.
-:- PTH: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                             1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCAT------GGGCAC 1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor VII precursor (EC 3.4.21.21) (Serum prothrombin
                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Musinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CALCIUM (BY SIMILARITY).
-1- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
-1- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                   446 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
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                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   conversion accelerator).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mus musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HSSP; P08709; 1BF9.
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                                                                                                                                                                                                                                                                                                                                                                                                                                   FA7_MOUSE
P70375;
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Hydrolase; Serine protease; Blood coagulation; Zymogen; Glycoprotein;
Liver; Plasma; Vitamin K; Calcium-binding; Gamma-carboxyglutamic acid;
                                                                                                                                                                                                                                                                                                                                                                                                                               CLEAVAGE (BY FACTOR XA, FACTOR XIIA, FACTOR IXA, OR THROMBIN) (BY SIMILARITY). BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                            EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL). EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HYDROXYLATION (BY SIMILARITY).
N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAMMA-CARBOXYGLUTAMIC ACID.
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GAMMA-CARBOXYGLUTAMIC ACID.
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BY SIMILARITY.
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                                                                                                                                                                                                                                                                                                                                                              FACTOR VII LIGHT CHAIN. FACTOR VII HEAVY CHAIN.
                                                                                                                                                                                                                                                                                                                              EGF-like domain; Repeat; Signal; Hydroxylation.
                                                                                                                                                                                                                                                                                                                                                                                                                       SERINE PROTEASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BY SIMILARITY.
BY SIMILARITY.
                                                 Interpro; IPR000742; EGF_2.
Interpro; IPR001881; EGF_Ca.
Interpro; IPR001283; GLA_blood.
Interpro; IPR001284; Ser_protease_Try.
Interpro; IPR000294; VitK_dep_GLA.
Pfan; PF00008; EGF; 2.
Pfan; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                           PROSITE; PSO1011; GLU_CARBOXYLATION; 1. PROSITE; PS50240; TRYPSIN_DOM; 1. PROSITE; PS0134; TRYPSIN_HIS; 1. PROSITE; PS0135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                            POTENTIAL.
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                                                                                                                                                                                                                                                                                                                                                                                       GLA-RICH.
                                                                                                                                           PRINTS: PRO0722; CHYMOTRYPSIN.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00179; EGE_CA; 1.
SMART; SM00179; EGE_Like; 1.
SMART; SM00006; GLA; 1.
SMART; SM00006; GLA; 1.
PROSITE; PS00012; EGE_1; 1.
PROSITE; PS01186; EGE_2; FALSE_NEG.
PROSITE; PS01186; EGE_2; FALSE_NEG.
MEROPS; S01.215; -.
MGD; MGI:109325; F7.
Interpro; IPR000152; Asx_hydroxyl.
Interpro; IPR001314; Chymctrypsin.
Interpro; IPR000561; EGF_like.
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Length:

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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                 121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                         181 AGCCTGTGCTGCGGCACGCACGTGCATCGACGCCATCGGCAGCTTCAGCTGCGACTGC 240
                                                                                                                                                                                                                                                                                                                                                                                                              96 -----CysGlnAsnGlyGlyThrCysGlnAspHisLeuLysSerTyrValCysPheCys 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                    241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGC---TTCCTCAATTGCTCG 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           114 LeuLeuAspPheGluGlyArgAsnCysGluLysSerLysAsnGluGlnLeuIleCysAla 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298 CTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGGGGC---TGT 354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         355 AGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAG 414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          154 SerCysHisGluAspTyrThrLeuGlnProAspGluValSerCysLysProLysValGlu 173
                                                                                                                                               1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCCTGGAGCGGGAGTGCATAGAGGAG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       174 TyrProCysGlyArg---IleProValValGluLysArgAsnSerSerArgGlnGly 192
                                                                                                                                                                                   42 AlaAsnSerLeuLeuGluGluLeuTrpProGlySerLeuGluArgGluCysAsnGluGlu 61
                                                                                                                                                                                                                                                            62 GlnCysSerPheGluGluAlaArgGluIlePheLysSerProGluArgThrLysGlnPhe 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   415 TTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGGAGGAGTCACCTGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG 534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                946 ITCGICCICAACIICAICAAGAITCCCGIGGICCCGCACAAIGAGIGCAGCGAGGICAIG 1005
                                                                                                                                                                                                                                                                                                                           535 GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGATGGCCTGGGGGGCA 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         203 GlyGluCysProTrpGlnAlaVal---LeuLysIleAsnGlyLeuLeuLeuCysGlyAla 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               595 GIGCTCATCCACCCTCCTGGGTGCTGACAGGGGCCCACTGCATGGATGAGTCCAAG--- 651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       652 -----AAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGGCGGGAGAAGTGGGAG 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242 TrpGlyAsnIleThrValValNetGlyGluHisAspPheSerGluLysAspGlyAspGlu 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     706 CTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGAC 765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       262 GlnValArgArgValThrGlnValIleMetProAspLysTyrIleArgGlyLysIleAsn 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCC 825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        302 LeucysLeuProGluLysSerPheSerGluAsnThrLeuAlaArgIle---ArgPheSer 320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         321 ArgvalserGlyTrpGlyGlnLeuLeuAspArgGlyAlaThrAla------ 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     886 CTCGTGACGGCTGGGGCTACCACAGCAGCGAGAAGAAGGAGGCCAAGAGAAACCGCACC
                      71
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                        Conservative:
                                        Mismatches:
      Matches:
                                                              Indels:
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38.81%
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                                                  .006 AGCAAC------ATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGG 1050
                                                                                                                       1051 GACCGGCAGGATGCCTGCGAGGGGGACAGTGGGGGGCCCATGGTCGCCTCCTTCCACGGC 1110
                                                                                                                                                                                           1111 ACCTGGTTCCTGGTGGCCTGGTGAGCTGGGGTGAGGCCTGTGGGCTCCTTCACAACTAC 1170
                                                                                                                                                                                                                                                                1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
356 LysHisSerSerAsnThrProLyslieThrGluAsnMetPheCysAlaGlyTyrMetAsp 375
                                                                                                                                            376 GlyThrLysAspAlaCysLysGlyAspSerGlyGlyProHisAlaThrHisTyrHisGly 395
                                                                                                                                                                                                                Axelrod J.H., Read M.S., Brinkhous K.M., Verma I.M.; "Phenotypic correction of factor IX deficiency in skin fibroblasts of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Proc. Natl. Acad. Sci. U.S.A. 86:10095-10099(1989).

-!- FUNCTION: FACTOR IX IS A VITAMIN K-DEPENDENT PLASMA PROTEIN THAT PARTICIPATES IN THE INTRINSIC PATHWAY OF BLOOD COAGULATION BY CONVERTING FACTOR X TO ITS ACTIVE FORM IN THE PRESENCE OF CA++
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IONS, PHOSPHOLIPIDS, AND FACTOR VIIIA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUBUNIT: FACTOR IX IS ACTIVATED BY FACTOR XIA, WHICH EXCISES THE
                                                                                                                                                                                                                                                                                                                                                                                                                          01-FEB-1991 (Rel. 17, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor IX precursor (EC 3.4.21.22) (Christmas factor).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACTIVATION PEPTIDE AND THUS PRODUCES A MOLECULE CONSISTING OF 2 CHAINS HELD TOGETHER BY ONE OR MORE DISULFIDE BONDS.

DISEASE: HEWOPHILIA B IS DUE TO DEFECTS IN FACTOR IX.

MISCELLANEOUS: CALCIUM BINDS TO THE GAMMA-CARBOXYCLUTAMIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Canis familiaris (Dog).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-90099303; PubMed-2461310;
Evans J.P., Brinkhous K.M., Brayer G.D., Reisner H.M., High K.A.;
"Canine hemophilia B resulting from a point mutation with unusual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GLA) RESIDUES AND, WITH STRONGER AFFINITY, TO ANOTHER SITE, BEYOND THE GLA DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Evans J.P., Watzke H.H., Ware J.L., Stafford D.W., High K.A.; "Molecular cloning of a CDNA encoding canine factor IX.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Proc. Natl. Acad. Sci. U.S.A. 87:5173-5177(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
-!- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                             452 AA.
                                                                                                                                                                                                                                                                                                                                                                             PRT;
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                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Blood 74:207-212(1989)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=9615;
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 use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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CLEAVAGE (BY FACTOR XIA) (BY SIMILARITY).
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ACTIVATION PEPTIDE.
FACTOR IXA (ACTIVE FORM) HEAVY CHAIN.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2.
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PRINTS, PRO0722, CHYMOTRYPSIN.

PRINTS; PRO0122, CHYMOTRYPSIN.

PRINTS; PRO0122, CHYMOTRYPSIN.

SMART; SMO0139; GER_CA; 1.

SMART; SMO0020; Tryp_SPC; 1.

PROSTIE: PS00010; ASX_HYRROXYL; 1.

PROSTIE: PS00010; ASX_HYRROXYL; 1.

PROSTIE: PS01187; EGF_L; 1.

PROSTIE: PS01187; EGF_L; 1.

PROSTIE: PS01187; EGF_Z; 2.

PROSTIE: PS01014; TRYPSIN.LATION; 1.

PROSTIE: PS00134; TRYPSIN.LIS; 1.

PROSTIE: PS00134; TRYPSIN.LIS; 1.

PROSTIE: PS00134; TRYPSIN.LIS; 1.
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InterPro; IPR0001881; EGF_G..
InterPro; IPR001881; EGF_G..
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GIA.
Pfam; PF00008; EGF; 2.
Pfam; PF000089; trypsin; 1.
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Interpro; IPR001314; Chymotrypsin.
Interpro; IPR000561; EGF-like.
                                                        EMBL; M21757; AAA75006.1; -. EMBL; M33826; AAA30844.1; -.
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HSSP; P00740; 1CFH.
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G -> E (IN HEMOPHILIA B).
G -> E (IN HEMOPHILIA B).
MW; 1F6537C46A6960ED CRC64;
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946 TTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGGGGAGGTCATG 1005
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670 GGAGAGTATGACCTGCGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTC 729
                       1066 TGCGAGGGCGACAGTGGGGGCCCATGGTCGCCTTCCACGGCACCTGGTTCCTGGTG 1125
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                                                                 730 TTCGTCCACCCAACTACAGCAAGAGCACCACC-----GACAATGACATGGCACTGCTG 783
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                                                                                                                                                                 311 GluLeuAspGluProLeuThrLeuAsnSerTyrValThrProileCys----- 326
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359 ---IleLeuGlnTyrLeuLysValProLeuValAspargAlaThrCysLeuArgSerThr 377
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-JUL-1986 (Rel. 01, Created)
01-JAN-1988 (Rel. 06, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor IX precursor (EC 3.4.21.22) (Christmas factor).
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MEDLINE=85190593; PubMed=3857619;
MEDLINE=85190593; Nubmed=3857619;
MEGraw R.A., Davis L.M., Noyes C.M., Lundblad R.L., Roberts H.R.,
Graham J.B., Stafford D.W.;
"Evidence for a prevalent dimorphism in the activation peptide of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
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MEDLINE-84236100; PubMed-6329734;
Anson D.S., Choo K.H., Rees D.J.G., Giannelli F., Gould K.G.,
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Proc. Natl. Acad. Sci. U.S.A. 82:2847-2851(1985).
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Yoshitake S., Schach B.G., Foster
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Jaye M., de la Salle H., Schamber F., Balland A., Kohli V., Findell A., Tolstoshev P., Lecocq J.P., Isolation of a human anti-haemophilic factor IX cDNA clone using a unique 52-base synthetic oligonucleotide probe deduced from the amino Nucleic Acids Res. 11:235-2335(1983).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          de la Salle C. Charmantier J.L., Baas M.J., Schwartz A., Wiesel M.L., Grunebaum L., Cazenave J.-P., "A deletion located in the 3' non translated part of the factor IX gene responsible for mild haemophilia B."; Thromb. Haemost. 70:370-371(1993).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-84185715; PubMed-6425296; Morita T., Isaacs B.S., Esmon C.T., Johnson A.E.; "Derivatives of blood coagulation factor IX contain a high affinity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIGNAL SEQUENCE CLEAVAGE SITE.
MEDLINE-86189947, Pubmed-3009023;
Bentley A.K., Rees D.J.G., Fizza C., Brownlee G.G.;
"Defective propeptide processing of blood clotting factor IX caused by mutation of arginine to glutamine at position -4.";
                                                                                                                                                                                                                                                                                                    Jagadeeswaran P., Lavelle D.E., Kaul R., Mohandas T., Warren S.1 "Isolation and characterization of human factor IX cDNA: identification of Taq I polymorphism and regional assignment."; Somat. Cell Mol. Genet. 10:465-473(1984).
                     human anti-haemophilic factor IX.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE-83308813; PubMed-6688526; McMullen B.A., Fujikawa K., Kisiel W.; "The occurrence of beta-hydroxyaspartic acid in the vitamin "The occurrence of beta-hydroxyaspartic acid in the vitamin
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MEDLINE-78194509; PubMed-659613;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ca2+-binding site that lacks gamma-carboxyglutamic acid.
J. Biol. Chem. 259:5698-5704(1984).
                                                                                                                                                                                                                                                                                                                                                                                         NEQUENCE OF 290-359 FROM N.A.
MEDLINE-88127096; PubMed=3340835;
Stoflet E.S., Koeberl D.D., Sarkar G., Sommer S.S.;
"Genomic amplification with transcript sequencing.";
Science 239:491-494(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 di Scipio R.G., Kurachi K., Davie E.W.,
"Activation of human factor IX (Christmas factor).";
J. Clin. Invest. 61:1528-1538(1978).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Morita T., Isaacs B.S., Esmon C.T., Johnson A.E., J. Biol. Chem. 260:2583-2583(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        K-dependent blood coagulation zymogens.";
Blochem. Blophys. Res. Commun. 115:8-14(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Biol. Chem. 264:21257-21265(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 47-461 (VARIANT NAGOYA).
MEDLINE-90078229; PubMed=2592373;
                                                                                         MEDLINE=83220788; PubMed=6687940;
                                                                                                                                                                                                                                                                                MEDLINE=84300526; PubMed=6089357;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 444-461 FROM N.A. MEDLINE=94054330; PubMed=8236150;
Huddleston J.A., Brownlee G.G.;
                                                                                                                                                                                                                                            SEQUENCE OF 36-326 FROM N.A.
               "The gene structure of huma
EMBO J. 3:1053-1060(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HYDROXYLATION OF ASP-110.
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Li L., Darden T.A., Freedman S.J., Furie B.C., Furie B., Baleja J.D., Smith H., Hiskey R.G., Pedersen L.G., "Refinement of the NMR solution structure of the gamma-carboxyglutamic acid domain of coagulation factor IX using molecular dynamics simulation with initial Ca2+ positions determined
                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-91344709; PubMed-2129367; Iwanaga S., Ikasiel W., Hase S., Ikenaka T.; Iwanaga S., Nishimura H., Kawabata S., Kisiel W., Hase S., Ikenaka T.; "A new trisaccharide sugar chain linked to a serine residue in the first EGF-like domain of clotting factors VII and IX and protein Z."; Adv. Exp. Med. Biol. 281:121-131(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Freedman S.J., Furle B.C., Furle B., Baleja J.D.;
Freedman S.J., Furle B.C., F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (In) Abstracts of XIth international conference on methods in protein structure analysis, pp.50-50, Annecy (1996).
                                                                                 MEDILINE-90060160; PubMeda-2511201;
Nishimura H., Kawabata S., Kisiel W., Hase S., Ikenaka T., Takao T.,
Shinonishi Y., Iwanaga S.;
"Identification of a disaccharide (Xyl-Glc) and a trisaccharide
(Xyl2-Glc) O-glycosidically linked to a serine residue in the first
epidermal growth factor-like domain of human factors VII and IX and
protein Z and bovine protein Z.";
J. Biol. Chem. 264:20320-20325(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Harris R.J., Papac D.I., Truong L., Smith K.J.; "Partial phosphorylation of serine-68 in EGF-1 of human factor IX.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE-20575397; PubMed=11133752; Artida V.R., Hagstrom J.N., Deitch J., Heiman-Patterson T., Artida V.R., Hagstrom J.N., Deitch J., Herzog R.W., Couto L.B., Camire R.W., Chu K., Fields P.A., Herzog R.W., Couto L.B., Larson P.J., High K.A.; "Posttranilational modifications of recombinant myotube-synthesized
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Freedman S.J., Furie B.C., Furie B., Baleja J.D.; "Structure of the calcium ion-bound gamma-carboxyglutamic acid-rich
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Identification of the phospholipid binding site in the vitamin K-dependent blood coaqulation protein factor IX."; J. Biol. Chem. 271:16227-16236(1996).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDIJUB-92388094; PubMed=1517205; MEDIJUB-92388094; PubMed=1517205; Mishimura H., Takao T., Hase S., Shimonishi Y., Iwanaga S.; Nishimura factor IX has a terrasaccharide O-glycosidically linked to "enine 61 through the fucose residue."; Serine 61 through the fucose residue."; J. Biol. Chem. 267:17520-17525(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRUCTURE OF CARBOHYDRATE ON SER-107.
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Biochemistry 36:2132-2138(1997).
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Cell 45:343-348(1986)
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                                                                   growth
                                                                                                                                                             MEDLINE-93284090; PubMed-1304885; Baron M., Norman D.G., Harvey T.S., Handford P.A., Mayhew M., Tse A.G.D., Brownlee G.G., Campbell I.D.C.; Tse A.G.D., Brownlee G.G., Campbell I.D.C.; The three-dimensional structure of the first EGF-like module of human factor IX: comparison with EGF and TGF-alpha.";
                                                                                                                                                                                                                                                                                                                                       MEDLINE-95330802; PubMed-7606779;
Rao Z., Handford P., Mayhew M., Knott V., Brownlee G.G., Stuart
Rap Z., Handford P., Hayhew M., Knott V., Brownlee G.G., Stuart
"The structure of a Ca(2+)-binding epidermal growth factor-like
domain: its role in protein-protein interactions.";
            MEDLINE-91308127; PubMed=1854745; MEDLINE-91308127; PubMed=1854745; Huang L.H., Cheng H., Pardl A., Tam J.P., Sweeney W.V.; Requence-specific 1H NMR assignments, secondary structure, and location of the calcium binding site in the first epidermal grow factor like domain of blood coagulation factor IX."; Biochemistry 30:7402-7409(1991).
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280 GlyGluHisAsnIleGluGluThrGluHisThrGluGlnLysArgAsnVallleArgIle 299
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                                                                                              610 TCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTT
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01-FEB-1991 (Rel. 17, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor IX precursor (EC 3.4.21.22) (Christmas factor)
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Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Rodentia; Sciurognathi; Muridae; Mus.
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MEDLINE-90152675; PubMed-2303254;

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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation. The Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
Sarkar G., Koeberl D.D., Sommer S.S.;
"Intect sequencing of the activation peptide and the catalytic domain Genomics 6:133-143(1990).
                                                form factor Xa. -1- SUBUNIT: FACTOR IX IS ACTIVATED BY FACTOR XIA, WHICH EXCISES THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLEAVAGE (BY FACTOR XIA) (BY SIMILARITY).
CLEAVAGE (BY FACTOR XIA) (BY SIMILARITY).
                                                                                                                                           ACTIVATION PEPTIDE AND THUS PRODUCES A MOLECULE CONSISTING OF 2 CHAINS HELD TOGETHER BY ONE OR MORE DISULEIDE BONDS.
SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI.
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FACTOR IXA (ACTIVE FORM) HEAVY CHAIN.
EGF-LIKE 1, CALCIUM-BINDING (POTENTIAL).
EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FACTOR IXA (ACTIVE FORM) LIGHT CHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Blood coagulation; Plasma; Serine protease; Calcium-binding; Hydrolase; Glycoprotein; Vitamin K; Gamma-carboxyglutamic acid; Hemophilia; Hydroxylation; Zymogen; Signal; EGF-like domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAMMA-CARBOXYGLUTAMIC ACID
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GAMMA-CARBOXYGLUTAMIC ACID
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SMART; SM00179; EGF_CA; 1.
SMART; SM00069; GGA; 1.
SMART; SM000009; GLA; 1.
PROSITE; PS00010; AS_HYDROXIL; 1.
PROSITE; PS01086; EGF_1; 1.
PROSITE; PS01187; EGF_CA; 1.
PROSITE; PS01187; EGF_CA; 1.
PROSITE; PS00011; GLU_CARBOXYLATION; 1.
PROSITE; PS00011; GLU_CARBOXYLATION; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
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InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE; PS00134; TRYPSIN_HIS; PROSITE; PS00135; TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                     EMBL; M23109; AAA37629.1; -.
EMBL; M26236; AAA37630.1; -.
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Pfam; PF00089; trypsin; 1.
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HSSP; P00740; ICFH.
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GAMMA-CARBOXYGLUTAMIC ACID

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      112 GluGlyArgAsnCysGluLeuAspAlaThr-----CysAsnIleLysAsnGlyArg 128
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N-LINKED (GLONAC. . .) (POTENTIAL).
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GAMMA-CARBOXYGLUTAMIC ACID
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                  GAMMA-CARBOXYGLUTAMIC ACID
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Mismatches:
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30-MAY-2000 (Rel. 39, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor X (EC 3.4.21.6) (Trocarin prothrombin activator). Tropidechis carinatus (Australian rough-scaled snake).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Lepidosauria; Squamata; Scleroglossa; Serpentes; Colubroidea; Elapidae; Notechinae; Tropidechis.
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|169 AlaSerIleSerTyrSerSerLysLysIleThrArgAlaGluThrValPheSerAsnMet 188
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MEDLINE=99326314; PubMed=10397729; Joseph J.S., Chung M.C.M., Jeyaseelan K., Kini R.M.; M.; Amino acid sequence of trocarin, a prothrombin activator from Tropidechis carinatus venom: its structural similarity to coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glycoprotein; Hydrolase; Serine protease; Plasma; Blood coagulation; Gamma-carboxyglutamic acid; Hydroxylation; Calcium-binding; Vitamin K;
                                                                                                                                                                                                                                                                                                        -1- PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN THE INTRINSIC PATHWAY), OR BY FACTOR VIIA (IN THE EXTRINSIC PATHWAY).
-1- SIMILARITY: BELONGS TO PEPTIDAGE FAMILY S1.
-1- SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
HSSP: PO0742; 1HCG.
                                                                                                                                                                                         -1- CATALYTIC ACTIVITY: Preferential cleavage: Arg-1-Thr and then Arg-1-Ile bonds in prothrombin to form thrombin.
-1- SUBUNIT: THE TWO CHAINS ARE FORMED FROM A SINGLE-CHAIN PRECURSOR AND ARE HELD TOGETHER BY 10 K MORE DISULFIDE BONDS.
-1- PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME GLUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND
                                                                                                            Blood 94.621-631(1999).
-!- FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein that converts prothrombin to thrombin in the presence of factor Va, calcium and phospholipid during blood clotting. Acts as a toxin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAMMA-CARBOXYGLUTAMIC ACID.
HYDROXYATATION (BY SIMILARITY).
CHARGE RELAY SYSTEM (BY SIMILARITY).
CHARGE RELAY SYSTEM (BY SIMILARITY).
CHARGE RELAY SYSTEM (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HEAVY CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACTIVATED FACTOR XA, HEAVY CEGF-LIKE 1, CALCIUM-BINDING EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAMMA-CARBOXYGLUTAMIC ACID.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SERINE PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SMART; SM00020; Tryp_SPC; 1.
PROSITE: PS00010; ASX_HYDROXYL; 1.
PROSITE: PS00012; EGF_1; 1.
PROSITE: PS001187; EGF_CA; 1.
PROSITE: PS0011; GLU_CARBOXXLATION; 1.
PROSITE: PS0011; GLU_CARBOXXLATION; 1.
PROSITE: PS00134; TRYPSIN_LOM; 1.
PROSITE: PS00134; TRYPSIN_LS; 1.
PROSITE: PS00134; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR000152; Asx.hydroxyl.
InterPro; IPR0001314; Chymotrypsin.
InterPro; IPR0001314; Chymotrypsin.
InterPro; IPR000742; EGF_11ke.
InterPro; IPR001481; EGF_Ca.
InterPro; IPR001488; EGF_II.
InterPro; IPR001283; GLA_blood.
InterPro; IPR001254; Ser_Protease_Try.
InterPro; IPR0002294; VILK_dep_GLA.
PRINTS; PR000722; CHYMOTRPSIN.
PRINTS; PR00010; EGFBLOD.
SEQUENCE, AND CHARACTERIZATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Zymogen; EGF-like domain; Repea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_like; 1.
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SMART; SM00020; Tryp_S
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                                                                                                  factor Xa.";
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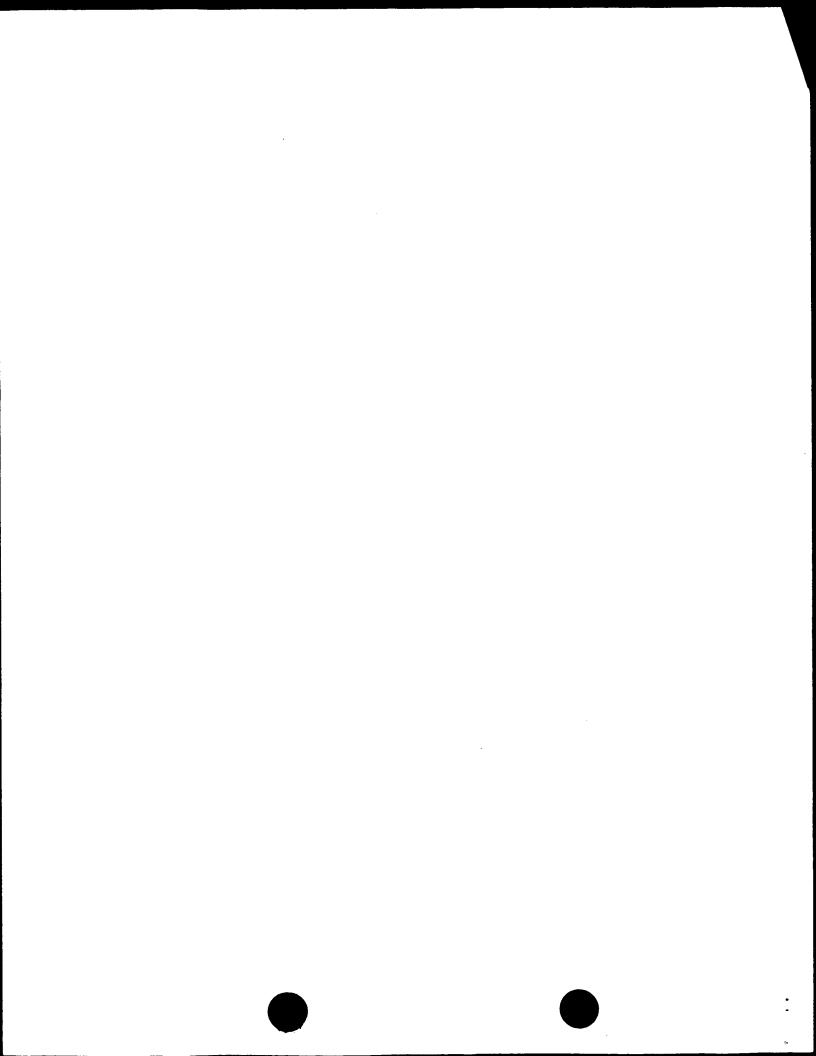
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                  121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTTGGTCTTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BY SIMILARITY.
                                                                                                                                                                               F5A5C7FE9BA561C1 CRC64;
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                                                                                                                                                          O-LINKED.
N-LINKED (GLCNAC.
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Matches:
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724.00
53.25%
35.66%
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bainformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (see http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     985 AATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATC 1044
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                          ::::::::||||||||
201 AspLysIleTyrValHisThrLysPheValProProAsnTyrTyrValHisGlnAsn 220
                                                                                                                      295 HisThrCysMetLeuSerSerAspPheArgIleThrGlnAsnMetPheCysAlaGlyTyr 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Murakawa M., Okamura T., Kamura T., Kuroiwa M., Harada M., Niho Y.;
"A comparative study of partial primary structures of the catalytic
region of mammalian protein C.";
Br. J. Haematol. 86:590-600(1994).
-!- FUNCTION: PROTEIN C. IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT
REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VIIIA
IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 335 ArgAspThrHisPheileThrdlyIleIleSerTrpGlyGluGlyCysAlaArgLysGly 354
                                                                                                                                                                                   805 CTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGAGCTC 864
                                                                                                                                                                                                                                                                               865 AATCAGGCCGGCCAGGAGACCCTCGTGACGGCTGGGGCTACCACAGCAGCCGAGAGAAG 924
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-DEC-1998 (Rel. 37, Created)
15-DEC-1998 (Rel. 37, Last sequence update)
15-DEC-1998 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C (EC 3.4.21.69) (Autoprothrombin IIA)
(Aniicoagulant protein C (Blood coagulation factor XIV) (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                                241 PheSerGluAsnValProAlaCysLeuProThrAlaAspPheAla---AsnGluVal
                                                                                                                                                                                                                                                                                                               260 LeumetLysGlnAspSerGlyIleValSerGlyPheGly------ArgIle
                                                                                                                                                                                                                                                                                                                                                                                                         ---AGCAAGAGCACCGACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Canis familiaris (Dog).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -!- TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.
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----CCCAACTAC
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721 AAGGAGGTCTTCGTCCAC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
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994 AGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGAC 1053
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SERARGASPALACYSGLUGLYASDSERGLYGLYPROMEtVALThrSerPheArgGlyThr 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       694 GAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAG 753
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  374 GGCCAGGAGACCCTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAAGGAGGAGGCCAAG 933
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                                                                                                                                                                                                                                   N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
                                                                                                                                              Blood coagulation; Glycoprotein; Serine protease; Hydrolase
                                                                                                                                                                                                                                                                               E8B1BACF49220DFB CRC64;
                                                                                                                                                                           CHARGE RELAY SYSTEM CHARGE RELAY SYSTEM
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Conservative:
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BY SIMILARITY.
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                                                     InterPro; IPR001254; Ser_protease_Try. Pfam; PF00089; trypsin; 1. SMART; SM00020; Tryp_SPc; 1. PROSITE; PS50240; TRYPSIN_DOM; 1. PROSITE; PS00134; TRYPSIN_HIS; PARTIAL. PROSITE; PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                               MW.
                                                                                                                                                                                                                                                                                                                       4.19e-31
717.00
86.96%
81.99%
30.68%
            EMBL; D43751; BAA07808.1;
HSSP; P04070; 1PCU.
                                                                                                                                                                                                                                                                               17262
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125
110
149
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78
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                                          MEROPS; S01,218;
                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
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Search completed: March 17, 2003, 17:32:35 Job time : 57 secs



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Opput xenopus lae
Opput xenopus lae
Opput lampetra ja
O46607 papio hamad
O50726 homo sapien
O50726 drosophila
O5015 drosophila
O59vx38 drosophila
O59vx38 drosophila
      mus musculu
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Last sequence update)
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         Q63207
Q88947
Q54740
Q99L32
Q90YK1
                                                                                   Q9DBIO
Q8VCS4
Q9CQW3
Q9V4N6
                                                  Q61109
Q95ND7
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Q9XY57
Q90504
                                                                                                                                                                                                        Q90113
Q98119
Q8VDE0
Q8VDE0
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Q92338
Q9JJS9
Q9DGR2
Q8ROP5
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Q96899
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097506
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Q91001
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Q95ND6
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Q9VZH2
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122222
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PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                  Canis familiaris (Dog)
                                                                                                                                                                                                                                                                                                                                                                                                       Protein C precursor.
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Q9TTR0
-MODEL-frame+_n2p.model -DEV=x1p
-Q=/Cgn2_1/USPTO_spool/USO9761153/runat_11032003_084247_1993/app_query.fasta_1.1415
-D=-SPTREMBL_21 -QFMT=fastan -SUFFTX=n2p.rspt -MINMATCH=0.1 -LOOPGT_0.0
-LOOPEXT=0 -UNITS=bits -START=1 -END=-1 -MATRIX=blosum62 -TRANS=human40.cdi
-LIST=60 -DOCALIGN=200 -THR_SCORE-pct -THR_MAX=100 -THR_MIN=0 -ALIGN=20
-MODE-LOCAL -OOTFMT=pct -NORM=ext -HEAPSIZE=500 -MINLEN-0 -MAXLEN=200000000
-USR=USO9763153_@CGN_1_1_86_erunat_11032003_084247_1993 -NCPU=6 -CCPU=3
-NO_XLDXY -NO_MAAP -LARGEQUERY -NEG_SCORES=0 -WAIT -LONGLOG -DEV_TIMEOUT=120
-WARN_INMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7
                                                                                                                                                                                                                                                                                                                                                                                                                 Q9ttr0 canis famil
                                   March 17, 2003, 17:24:24 ; Search time 73.5 Seconds
   (without alignments)
   6980.372 Million cell updates/sec
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                                                                       1 gccaactccttcctggagga.....acaaggaagcccccagaag 1245
                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                               1343160
   GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
                         protein search, using frame_plus_n2p model
                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                  671580 seqs, 206047115 residues
                                                                                                                                                         Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 60 summaries
                                                                                      Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
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2337
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Score Match Length DB
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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                                                                                                         Brenig B.; -- Molecular characterization and chromosomal assignment of the canine
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Leeb T., Pfeiffer I., Kopp T., Deppe A., Brenig B.;
Analysis of canine protein C gene polymorphisms.";
Anim. Genet. 30:237-238(1999).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R SMART; SM00181; EGF; 2.

R SMART; SM00181; EGF; 2.

R SMART; SM00069; GLA; 1.

R PROSITE; PS00010; TAYD_SPC; 1.

R PROSITE; PS010186; EGF_1; UNKNOWN_1.

R PROSITE; PS01186; EGF_2; 2.

R PROSITE; PS01187; EGF_CA; 1.

R PROSITE; PS001187; EGF_CA; 1.

R PROSITE; PS001187; EGF_CA; 1.

R PROSITE; PS001187; TRYPSIN_DOM; 1.

R PROSITE; PS00134; TRYPSIN_LSER; 1.

R PROSITE; PS00135; TRYPSIN_LSER; 1.
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PROTEIN C CONDECTING DIPEPTIDE.
PROTEIN C HEAVY CHAIN.
7 ADDARCIC34E59FF CRC64;
                                                                                          Leeb T., Kopp T., Deppe A., Breen M., Matis U., Brunnberg
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Matches:
Conservative:
Mismatches:
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InterPro; 1PR00152; Asx_hydroxyl.
InterPro; 1PR001314; Chymotrypsin.
InterPro; 1PR00181; EGF_Ca.
InterPro; 1PR001881; EGF_Ca.
InterPro; 1PR001284; Ser_Protease_Try.
InterPro; 1PR000284; VitK_dep_GLA.
Pfam; PF00008; EGF; 2.
Pfam; PF00089; trypsin; 1.
PRINTS; PR00721; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
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                                                                                                                                                               Mamm. Genome 10:135-139(1999).
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                                                                       SEQUENCE FROM N.A.
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Query Match:
                                     NCBI_TaxID=9615;
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                                                                                                                                                protein C gene.
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                                                        143 AspAsnGlyGlyCysSerHisTyrCysLeuGluGluGluGlyGlyArgHisCysSerCys 162
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           421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
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                                                                                       301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCGCTGTAGCTGT
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AGCCTGTGCTGCGGGCACGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                  the EMBL/GenBank/DDBJ databases
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290
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63
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                                                                  Last sequence update)
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Pfam; PF00699; trypsin; 1.

PROSITE; PS00010; ASX_HYDNONI_1.

PROSITE; PS01186; EGF_1; UNKNOMI_1.

PROSITE; PS01186; EGF_2; UNKNOMI_2.

PROSITE; PS01187; EGF_CA; UNKNOMI_1.

PROSITE; PS01011; TRYPSIN_LOM; 1.

PROSITE; PS00111; TRYPSIN_LOM; 1.

PROSITE; PS00134; TRYPSIN_LHIS; UNKNOMI_1.
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Matches:
Conservative:
Mismatches:
                             460 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels:
Gaps:
                                                                                                                                                                                                                                                                    InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR000561; EGF-like.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; Vitk_dep_GLA.
Pfam; PF000008; EGF; 2.
                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .09-763-153-1 (1-1245) x Q91WN8 (1-460)
                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hydrolase; Serine protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.55e-110
1631.00
83.74%
70.39%
69.79%
                                                      (TrEMBLrel. 19, (TrEMBLrel. 19, I (TrEMBLrel. 21, I
                                                                                                                                                                                                                 Strausberg R.;
Submitted (SEP-2001) to the
EMBL; BC013896; AAH13896.1;
                             PRELIMINARY;
                                                      01-DEC-2001 (TrEMBLrel.
                                                              01-DEC-2001 (TrEMBLre) 01-JUN-2002 (TrEMBLre) Similar to protein C.
                                                                                                                                                                                                                                                         MGD; MGI:97771; Proc.
                                                                                                                        Mus musculus (Mouse)
                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity:
Query Match:
                                                                                                                                                               NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
                                                                                                                                                                                                        IISSUE=LIVER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                         Q91WN8;
                            Q91WN8
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RESULT 2
            Q91WN8
ID Q9
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955 AACTICATCAAGATICCCGTGGTCCCGCACAATGAGTGCAGGGGGGGTCATGAGCAACATG 1014
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                                                                     1135 AGCTGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGC 1194
361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                       421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA 480
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201 AspLeuGluAspGluLeuGluProAspProArgIleValAsnGlyThrLeuThrLysGln 220
                                                                                                                                                                                                                                   481 GACCAAGAAGACCAAGTA-----GATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG 534
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        439
                          162 AlaProGlyTyrGluLeuAlaAspAspHisMetArgCysLysSerThrValAsnPhePro 181
                                                                                                                                                                                                                                                                           655 CTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTG 714
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Eukaryota, Metazoa, Chordata, Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Musinae; Mus.
NCBL_raxID-10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
Last sequence update)
Last annotation update)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
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181 AGCCTGTGCTGCGGGCACGCCACGTGCATCGACGCCACCTTCAGCTGCGACTGC 240
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 AspLysGlyTrpGluGlyLysPheCysGlnGlnGluLeuArgPheGlnAspCysArgVal 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAG 60
                                                        "Complete sequence of UC72A01.";
Submitted (NOV-2000) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE
TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                              SMART; SM00020; Tryp_SPC; 1.

PROSITE; PS00010; ASX_HYDROXXL; 1.

PROSITE; PS00010; ASX_HYDROXXL; 1.

PROSITE; PS001186; EGF_2; 2.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS00119; GLU_CARBOXYLATION; 1.

PROSITE; PS00134; TRYPSIN_BIS; 1.

PROSITE; PS00134; TRYPSIN_BIS; 1.

PROSITE; PS00134; TRYPSIN_BIS; 1.

PROSITE; PS00135; TRYPSIN_BIS; 1.

Calclum_binding; EGF_like domain; Glycoprotein; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0293BC25E9D3ED16 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                   MGD; MGI:97771; Proc.
InterPro; IPR00152; Asx_hydroxyl.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR001881; EGF-11ke.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR001284; GLA_blood.
InterPro; IPR001284; Ser_protease_Try.
InterPro; IPR001284; Ser_protease_Try.
Pfam; PF00008; EGF; 2.
Pfam; PF00089; trypsin; 1.
PRINTS; PR00702; CHYMOTRYPSIN.
PRINTS; PR007021; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
SWART; SM00001; EGF; 2.
SWART; SM000001; EGF; 1.
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1625.00
83.50%
70.15%
69.53%
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                                                                                                                      EMBL; AF318182; AAK07918.1;
HSSP; P04070; 1PCU.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                SEQUENCE FROM N.A.
                                                                                                                                                           MEROPS; S01.218;
                              STRAIN-C57BL;
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Pred. No.:
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955 AACTICAICAAGAITCCCGIGGICCCGCACAAIGAGIGCAGCGAGGICAIGAGCAACAIG 1014
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                                                                                                                                                                                                                                                                                                                                                                              Rattus norvegicus (Rat).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
                        181
                                                   421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCCAGTCACCTGAAACGAGACACAGAA 480
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              535 GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA
                                                                                                                                                                                                                  595 GIGCTCATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAG
                                                                                                                                                                                                                                241 ValLeuileHisThrSerTrpValLeuThrAlaAlaHisCysValGluGlyThrLysLys
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                                                                                                                                                                                                                                                                                                261 LeuThrValArgLeuGlyGluTyrAspLeuArgArgArgAspHisTrpGluLeuAspLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1195 TACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
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STRAIN-SPRAGUE-DAWLEY,
MEDLINE-96093365, PubMed-8578539,
Stanton C., Ross R.P., Hutson S., Wallin R.;
Stanton Corpetition between vitamin K-dependent clotting factors for intracellular processing by the vitamin K-dependent gamma-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
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113 ThrGluGlyPheGluGlyLySAsnCySGluLeuPheValArgLySLeu---CySSerLeu 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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-1- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE TRYPSIN FAMILY.
EMBL; X79807; CAR56202.1; -.
HSSP; P00742; IXAA.
MEROPS; S01.216; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC
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                                                                                                                                                                                                                                                                                                                                                                                                                                    MERCHES, SULLIB; -.

InterPro; IPR0001314; Chymotrypsin.

InterPro; IPR001314; Chymotrypsin.

InterPro; IPR001314; Chymotrypsin.

InterPro; IPR001318; EGF_1ike.

InterPro; IPR001381; EGF_Ca.

InterPro; IPR001281; EGF_Ca.

InterPro; IPR001284; Ser_protease_Try.

InterPro; IPR001284; VitK_dep_GLA.

R Pfam; PF00008; EGF; 2.

R Pfam; PF00008; EGF; 2.

R Pfam; PF00008; EGF; 2.

R PRINTS; PR00722; CHYMOTRYPSIN.

R PRINTS; PR00722; CHYMOTRYPSIN.

R PRINTS; PR00001; EGF_Like; 1.

SMART; SM00001; EGF_Like; 1.

R SMART; SM00000; EGF_Like; 1.

R PROSTIE; PS00010; EGF_2, 1.

R PROSTIE; PS001186; EGF_2; 1.

R PROSTIE; PS001186; EGF_2; 1.

R PROSTIE; PS01186; EGF_CA; 1.

R PROSTIE; PS01187; EGF_CA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      482
165
79
153
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Matches:
Conservative:
Mismatches:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Repeat; Serine protease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-763-153-1 (1-1245) x Q63207 (1-482)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    482 AA; 54265 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2,15e-51
818.50
54.71%
37.00%
35.02%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ercent Similarity:
est Local Similarity:
uery Match:
                              SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hydroxylation;
                                                                                                                                                                                                                            carboxylase.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
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NAME OF STREET O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
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1102 TTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGGCTGTGGGCTCCTT 1161
                                                                                                                                                            465
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1042 ATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGCCCCATGGTCGCCTCC 1101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1162 CACAACTACGGCGTTTACACCAAAGTCAGCGGCTACCTCGACTGGATCCATGGGCACATC 1221
                                                                                                     507
                                                                                                                                                                                                                                                                                                                                                                                                                              624
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     922 AAGGAGGCCAAGAAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCG 981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           445 GlyLysTyrGlyIleTyrThrLysValThralaPheLeuLysTrpIleAspArgSerMet 464
                                      132 AspAsnGlyAspCysAspGlnPheCysArgGluGluGluGlnAsnSerValValCysSerCys 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTG 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              272 AlaAlaHisCysLeuHisGlnAlaLysArgPheLysValArgValGlyAspLeuAsnThr 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              292 GluGlnGluAspGlyGlyGluMetValHisGluValAspMetIleIleLysHisAsnLys 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              332 PheArgGluAsnValAlaProAlaCysLeuProGlnLysAspTrpAlaGluAlaThrLeu 351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     865 AATCAGGCCGGCCAGGAGACC---CTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAG 921
                                                                                                                                                            ------CGCAGTCACCTG
                                                                                                                                                                                                                                                                    252 AspGluGluThrAspGlyPheCysGlyGlyThrIleLeuAsnGluPheTyrIleLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCCTGTAGCTGT
                                                                              GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT
                                                                                                                                                                                                  172 CysGlyLysThrAsnLysGlyArgAlaLysArgSerValAlaLeuAsnThrSerAsnSer
                                                                                                                                                                                                                                                                                                                             990900----
                                                                                                                                                                                                                                                                                                                                                                                                         508 CTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       565 GACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        685 CGCCCTGGGAGAGTGGGACCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      745 TACAGCAAGAAGCACCACCACCAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    425 PhelysAspThrTyrPheValThrGlyIleValSerTrpGlyGluGlyCysAlaArgLys
                                                                                                                                                                                                                                                                                                                                                                 212 SerGluLeuLeuAsnLeuAsnLysThrGluProGluAlaAsnSerAspAspValIleArg
                                                                                                                                                                                                                                          466 AAACGAGACACAGAAGACCAAGAAGACCAAGTAGAT----
                                                                                                                                                            TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAG------
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465 LysAlaArgValGlyPro 470

RESULT 5

US-09-763-153-1 (1-1245) x 088947 (1-481)

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MEDLINE-9834793; Pubmed-9684971;
Liang Z., Cooper A., DeFord M.E., Carmeliet P., Collen D.,
Castellino F.J., Rosen B.D.;
"Cloning and characterization of a cDNA encoding murine coagulation
factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase; Repeat;
                                                                                                            Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Musinae; Mus
                                                                                                                                                                                                                                                                                                                                        Cooper A., Liang Z., Castellino F.J., Rosen E.D.;
"Cloning and Characterization of the Murine Factor X Gene.";
Thromb. Haemost. 0:00-0(2000).
-i- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COAGULATION FACTOR X.
8AC09DE5EF9D271E CRC64;
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162
77
158
48
                                      01-NOV-1998 (TrEMBLrel. 08, Created)
01-NOV-1998 (TrEMBLrel. 08, Last sequence update)
01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SWARY; SWO0020; TTYP_SPC; 1.
PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.
PROSITE; PS01180; EGF_1; UNKNOWN_1.
PROSITE; PS01187; EGF_2; 2.
PROSITE; PS0101187; EGF_CA; 1.
PROSITE; PS00011; GLU_CARBOXYLATION; 1.
PROSITE; PS00013; TRYPSIN_DOW; 1.
PROSITE; PS000135; TRYPSIN_HIS; UNKNOWN_1.
              481 AA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         InterPro; IPR000561; BGF-1ike.
InterPro; IPR000561; BGF-1ike.
InterPro; IPR001881; BGF-Ca.
InterPro; IPR001881; BGF-Ca.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
Pfam; PF00008; BGF; 2.
Pfam; PF00089; ITYPSIN; I.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR007021; CHYMOTRYPSIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                            HSSP; FUD.216; -. MEROPS; SOIL.216; -. MED: MGI:103107; FIO. InterPro; IPR000152; Asx_hydroxyl. InterPro; IPR001314; Chymotrypsin. TPR000561; EGF-11ke.
                PRT;
                                                                                                                                                                                   SEQUENCE FROM N.A.
STRAIN=C57BL6 X CBA; TISSUE=LIVER;
                                                                                                                                                                                                                                                                                  Thromb. Haemost. 80:87-91(1998).
                                                                                   Coagulation factor X precursor.
                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AF087644; AAC36345.1; -. EMBL; AF211347; AAF22980.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54018 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_like; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .31e-49
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53.71%
36.40%
33.98%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Serine protease; Signal. SIGNAL 1 40
              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                         HSSP; P00742; 1XKA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AA;
                                                                                                                                                                                                                                                                                                 [2]
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                         NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SMART; SM00069;
SMART; SM00020;
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                                                                                                                                                                                                                                                                                                                            STRAIN-129SJ
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                             088947;
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088947
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360
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                                                                                                                          121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                  151
                                                                                                                                                                                                                                                                                                                                                                                            172 CysGlyLysIleThrThrGlyArgArgLysArgSerValAlaLeuAsnThrSerAspSer 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     507
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   628 GCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGG 687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 272 AlaHisCysLeuHisGlnAlaArgArgPheLysValArgValGlyAspArgAsnThrGlu 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                688 CGCTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTAC 747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              292 LysGluGluGlyAsnGluMetValHisGluValAspValValIleLysHisAsnLysPhe 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           312 GlnArqAspThrTyrAspTyrAspIleAlaValLeuArgLeuLysThrProIleThrPhe 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          308 TCGCAGACCATAGTGCCCATCTGCCTCCGGACAGCGGCCTTGCAGAGCGCGGGGTCAAT 867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        351 ---MetThrGlnLysThrGlyIleValSerGlyPheGly-----ArgThrHisGluLys 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    925 GAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCAAGATTCCCGTGGTCCCGCAC 984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                        94
1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGGAGTGCATAGAGGAG 60
                 301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCGCTGTAGCTGT
                                                                                                                                                                                                                                                                                                                                361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                     TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGAAG-------CGCAGTCACCTG
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252 GluAspAsnGluGlyPheCysGlyGlyThrIleLeuAsnGluPheTyrILeLeuThrAla
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985 AATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATC 1044
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                                                                                                                      1045 CICGGGGACCGGCAGGAIGCCIGCGAGGGCGACAGIGGGGGGCCCCAIGGICGCCICCIIC 1104
                                     405 GlualaLysLeuGluAspalaCysGlnGlyAspSerGlyGlyProHisValThrArgPhe 424
                                                                                                                                                                                                                                                                                                                                                                                             445 LysTyrGlylleTyrThrLysValThrThrPheLeuLysTrplleAspArgSerMetLys 464
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Thromb. Res. 92:33-41(1998).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Plasmid pBluescript.
Bukaryota: Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-JUN-1998 (TrEMBLrel. 06, Last sequence update) 01-JUN-2002 (TrEMBLrel. 21, Last annotation update) cogquiation factor X precursor (EC 3.4.21.6).
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PRINTS; PR00001; GLABLOOD.
SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00069; GLA; 1.
SMART; SM00069; GLA; 1.
SMART; SW00010; ASX_HYDROXYL; UNKNOWN_1.
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PROSITE; PS00011; GLU_CARBOXYLATION; 1.
PROSITE; PS50240; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_HIS; UNKNOWN_1.
PROSITE; PS00135; TRYPSIN_SER; 1.
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PS01186; EGF_2; 2.
PS001187; GEF_CA; 1.
PS00011; GLU_CARBOXYLATION; 1.
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Heidtmann H.H., Kontermann R.E.;
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EMBL; AJ222677; CAA10933.1; -.
HSSP; P00742; 1XKA.
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95 -----CysGlnAsnGlnGlyAlaCysArgAspGlyIleGlyGlyTyrThrCysThrCys 112
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                                                                                                                                                                                                                                                                                                                                                                                                                     121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCGTGTAGCTGT 360
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             568 TCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCG 627
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Calcium-binding; EGP-like domain; Glycoprotein; Hydrolase; Plasmid;
Repeat; Serine protease; Signal.
SIGNAL 1 40 POTENTIAL.
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                                                     COAGULATION FACTOR X. CF702DE5EF9D97AE CRC64;
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162
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Mismatches:
Indels:
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Matches:
                                     POTENTIAL.
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                                                                     53986 MW;
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793.00
53.71%
36.40%
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Query Match:
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1045 CTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGGCCCATGGTCGCCTCCTTC 1104
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                                                                    351 ---MetThrGlnLysThrGlyIleValSerGlyPheGly-----ArgThrHisGluLys 367
               312 GlnArgAspThrTyrAspTyrAspIleAlaValLeuArgLeuLysThrProIleThrPhe 331
                                                                                                                 868 CAGGCCGGCCAGGAGACC---CTCGTGACGGGCTGGGGCTACCACAGCAGAGGAGAAG 924
                                                                                                                                                                                    925 GAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCAAGATTCCCGTGGTCCCGCAC 984
                                                                                                                                                                                                       ::: ||| ||| ||| GlyArgGlnSerAsn-----IleLeuLySMetLeuGluValProTyrValAspArg 384
                                                 808 TCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGCGAGCTCAAT
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Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
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01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481 AA.
InterPro; IPR000561; EGF-1ike.
InterPro; IPR000742; EGF-2.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR001438; EGF_II.
InterPro; IPR0012383; GLA_blood.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
Pfam; PF000098; EGF; 2.
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MGD; MG1.103107; F10.
InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR001314; Chymotrypsin.
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Pfam; PF00089; trypsln; 1.
PRINTS; PR00722; CHYMOTRYESIN.
PRINTS; PR00010; EGFBLOOD.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Coagulation factor X.
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PRINTS; PR00001; GLABLOOD.

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .21 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           152 AlaSerGlyTyrPheLeuGlyAsnAspGlyLysSerCysIleSerThrAlaProPhePro 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAG---------CGCAGTCACCTG 465
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        568 TCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCG 627
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   SMART; SMOUD11; EGF. 2.

SMART; SMOUD01; EGF. 11.

SMART; SMOUD001; EGF. 11.

SMART; SMOUD001; TTP_SPC; 1.

PROSITE; PSOUD10; ATP_PROPOXIL; UNKNOWN_1.

PROSITE; PSO1107; EGF_1; UNKNOWN_1.

PROSITE; PSO1108; EGF_2; 2.

PROSITE; PSO1101; EGF_CA; 1.

PROSITE; PSO1010; TXPESIN_DOM; 1.

PROSITE; PSO1010; TXPESIN_DOM; 1.

PROSITE; PSO1010; TXPESIN_DOM; 1.

PROSITE; PSO10109; TXPESIN_SER; 1.

Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                    1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGGAGTGCATAGAGGGA
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                                                                                                                                                                                                                         481 AA; 54004 MW; BD88E96C8A0B7E7F CRC64;
                                                                                                                                                                                                                                                                                        Matches:
Conservative:
Mismatches:
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793.00
53.71%
36.40%
SMART; SM00181; EGF; 2.
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Best Local Similarity:
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SEQUENCE 481
                                                                                                                                                                                                                                                           Alignment Scores:
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985 AATGAGTGCAGGGCGAGGTCATGAGCAACATGGTGTGAGAACATGCTGTGTGCGGGCATC 1044
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                                                                                                         292 LysGluGluGlyAsnGluMetValHisGluValAspValValIleLysHisAsnLysPhe 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           425 LysAsnThrTyrTyrValThrGlylleValSerTrpGlyGluGlyCysAlaArgLysGly 444
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                   808 TCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGAGCTCAAT 867
628 GCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGG 687
                                                                                                                                                748 AGCAAGAGCACCACCGACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCCTC 807
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Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi;
Actinopterygii; Neopterygii; Teleostei; Ostarlophysi; Cypriniformes;
                                                                                                                                                                                                                                              ---MetThrGlnLysThrGlyIleValSerGlyPheGly-----ArgThrHisGluLys
                                                                                                                                                                                                                                                                                                   CAGGCCGCCCAGGAGACC --- CTCGTGACGGCTGGGGCTACCACAGCAGCCGAGAAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    405 GlualaLysLeuGluAspAlaCysGlnGlyAspSerGlyGlyProHisValThrArgPhe
                                                                        688 CGCTGGGAGAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sheehan J., Templer M., Gregory M., Hanumanthalah R., Troyer D., Phan T., Thankavel B., Jagadeeswaran P.;
"Demonstration of the extrinsic coagulation pathway in teleostei: Identification of zebrafish coagulation factor VII.";
Proc. Natl. Acad. Sci. U.S.A. 98:8768-8773(2001).
EMBL; AX040345; AAK74192.1;

MEROPS: S01.215;
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InterPro; IPR0011881; EGF_GA.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
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234
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  519
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                                                                                                                                                                                                                                                                                                                                                                                                                                   58 GAGATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCC 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                118 TICTGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGC 177
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        640 GATGAGTCCAAGAAGCTCCTTGTCAGGCTT-----GGAGAGTATGACCTGCGGCGCTGG
                                                                                                                                                                             CD9D1B179601BA4C CRC64;
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165
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144
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pfam; PF00008; EGF; 2.
Pfam; PF00594; qla; 1.
Pfam; PF00089; trypsin; 1.
SMART; SM0179; EGF_CA; 2.
PROSITE; PS00022; EGF_1; UNKNOWN_1.
PROSITE; PS01081; EGF_2; UNKNOWN_2.
PROSITE; PS01081; GLU_CARBOXTLATION; UNKNOWN_1.
PROSITE; PS00134; TRYPSIN_DOM; 1.
PROSITE; PS00135; TRYPSIN_LHS; UNKNOWN_1.
PROSITE; PS00135; TRYPSIN_LHS; UNKNOWN_1.
PROSITE; PS00135; TRYPSIN_SER; UNKNOWN_1.
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Matches:
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787.00
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Best Local Similarity:
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UNKNOWN_1

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Targeting tissue factor on tumor vascular endothelial cells and tumor cells for immunotherapy in mouse models of prostatic cancer.";

Proc. Natl. Acad. Sci. U.S. A. 98:12180-12185(2001).

EMBL: AF273774; AAK56886.1; -
InterPro; IPR000152; Asx.hydroxyl.

InterPro; IPR000152; Asx.hydroxyl.

InterPro; IPR000181; EGF-1.

InterPro; IPR00181; EGF-2.

InterPro; IPR001254; Ser_Protease_Try.

InterPro; IPR001254; Ser_Protease_Try.

InterPro; IPR001254; Ser_Protease_Try.

InterPro; IPR001254; VitK_dep_GLA.

InterPro; IPR001254; VitK_dep_GLA.

InterPro; IPR001254; Ser_Protease_Try.

INTERPRO; IPR001354; Ser_Protease_Try.

INTERPRO**

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259 GluGlyThrGluGlnLeuIleGlnValAspGlnMetPheThrHisProAlaTyrValSer 278
                                                                                                                                                                                                                                                                                                                                                                                                                             934 AGAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGC 993
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353 ValGlnValSerAsnLeuThrLeuThrSerAsnMetPheCysAlaGlyTyrIleGluGly
                                                           754 AGCACCACCGACAAIGACAICGCACTGCIGCACCIGGCCCAGCCGCCACCCICTCGCAG
                                                                                                                                                                                  814 ACCATAGTGCCCCATCTGCCTCCGGACAGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCC
                                                                                                                                                                                                                                                                                                         874 GCCCAGGAGACCCTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAGGAGGAGGCCAAG
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Mammalia, Eutheria, Primates, Catarrhini, Hominidae, Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
Factor VII active site mutant immunoconjugate.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PS00022; EGF_1; UNKNOWN_1.
PS01186; EGF_2; UNKNOWN_1.
PS001187; EGF_CA; UNKNOWN_1.
PS00011; GLU_CARBOXYLATION; UNKNOWN_1.
PS00290; IG_MIC; UNKNOWN_1.
PS50240; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GITIACACCAAAGICAGCCGCIACCICGACIGGAIC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   413 IleTyrThrArgValSerAsnTyrLeuGlnTrpIle 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    701 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. MEDLINE-21477448; PubMed-11593034;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Homo sapiens (Human).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9606;
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PROSITE;
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PROSITE;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  765
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                                                                                                                                                                                                                                                                                        121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                         101 TrpileSerTyrSerAspGlyAspGlnCys-----AlaSer 112
                                                                                                                                                                                                                                                                                                                                                                                                       241 CGCAGCGCTGGGAGGGCCGCTTCTGCCAG---CGCGAGGTGAGCTTCCTCAATTGCTCG 297
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                                                                                                                                                                                                                                                                        61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC
                                                                                                                                                                                                                                                                                                                                                                                       .81 AGCCTGTGCTGCGGGGCACGGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       298 CTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCGC---TGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      355 AGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 415 TTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            193 TyrProCysGlyLys---IleProlleLeuGluLysArgAsnAla------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        475 ACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                535 GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241 ThrLeuIleAsnThrIleTrpValValSerAlaAlaHisCysPheAspLysIleLysAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             652 -----AAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    706 CTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAAGCACCACCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           766 AATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCC
                                          94AC6CEB42CC992F CRC64;
                                                                                     701
164
75
148
36
                                                                                                                Conservative:
Mismatches:
                                                                                     Length:
Matches:
                                                                                                                                             Indels:
PROSITE; PS00134; TRYPSIN_HIS; UNKNOWN_1
PROSITE; PS00135; TRYPSIN_SER; UNKNOWN_1
                                                                                                                                                                                       US-09-763-153-1 (1-1245) x Q96PQ8 (1-701)
                          Hydrolase; Serine protease.
SEQUENCE 701 AA; 77826 MW;
                                                                                    1.23e-48
781.00
56.50%
38.77%
                                                                                                                                Similarity:
                                                                                                                 Percent Similarity:
                                                                        Aliqnment Scores:
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1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
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                                                                                                      946 ITCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCAAATGAGTGCAGCGAGGTCATG 1005
                                                                                                                                                                           ----AGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGG 1050
                                                                                                                              ||| ::: ::||| ::: ::||| 355 LeuGluLeuMetValLeuAsnValProArgLeuMetThrGlnAspCysLeuGlnGlnSer 374
321 LeuCysLeuProGluArgThrPheSerGluArgThrLeuAlaPheVal---ArgPheSer 339
                                886 CTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAAGGAGGCCCAAGAGAAACCGCACC 945
                                                                                                                                                                                                                                                                                                                                                                                                      375 ArgLysValGlyAspSerProAsnIleThrGluTyrMetPheCysAlaGlyTyrSerAsp
                                                                                                                                                                                                                                                               395 GlySerLysAspSerCysAlaGlyAspSerGlyGlyProHisAlaThrHisTyrArgGly
                                                                                                                                                                                                                                                                                                                             Ornithorhynchus anatinus (Duckbill platypus).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Monotremata; Ornithorhynchidae; Ornithorhynchus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=21015017; PubMed=11132153;
Poorafshar M., Aveskogh M., Munday B., Hellman L.;
Identification and structural analysis of four serine proteases is monotreme, the platypus, Ornithorhynchus anatinus.";
Immunogenetics 52:19-28(2000).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE
                                                                 340 LeuValSerGlyTrpGlyGlnLeuLeuAspArgGlyAlaThrAla----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-MAR-2001 (TrEMBLrel. 16, Created)
1-MAR-2001 (TrEMBLrel. 16, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
coagulation factor X.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              469 AA.
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SMART; SM00101; EGF_Like; 2.
SMART; SM00069; EGR_11.
SMART; SM000069; TYP_SPC; 1.
PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; 1PR00152; Asx_hydroxyl.
InterPro; 1PR001314; Chymotrypsin.
InterPro; 1PR001314; Chymotrypsin.
InterPro; 1PR00184; EGF_2.
InterPro; 1PR001881; EGF_Ca.
InterPro; 1PR001881; EGF_Ca.
InterPro; 1PR001254; Ser_protease_Try.
InterPro; 1PR001254; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AF275654; AAG00453.1; -. HSSP; P00742; 1XKB.
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PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
SMART; SM00181; EGF; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pfam; PF00008; EGF; 2.
Pfam; PF00594; gla; 1.
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181 AGCCTGTGCTGCGGCACGCACGTGCATCGACGGCATCGGCAGCTTCAGCTGCGACTGC 240
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                                                                                                                                                                                                                                                                                                                                                                                                    61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    132 AsnAsnGlyAspCysGluGlnPheCysLysSerValValAsnThrValValCysSerCys 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361 GCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    152 AlaGlnGlyTyrIleLeuGlyAspAspGlnLysSerCysIleProThrValProPhePro 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      172 CysGlyLysLeuThrValGlyArgArgLysArgSerArgGluLeuProGluGluGlnAsp 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     454 -----CGCAGTCACCTGAAACGAGAC------ACAGAAGACCAAGAAGACCAA 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        212 GluProProAspGlnAsnThrThrLeuAlaGluProGlyGluAsnAlaLeuValArqIle 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         252 GluAsnGlyGlnGlyPheCysGlyGlyThrIleLeuAsnGluTyrTyrIleLeuSerAla 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           272 AlaHisCysMetHisGlnAlaLysArgPheLysValArgValGlyGluArgAspThrGlu 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGCTGGGAGAAGTGGGAGCTGGACCTCGACATCAAGGAGGTCTTCGTCCACCCCAACTAC 747
                                                                                                                                                                                                                                                                                                                                    1 GCCAACTCCTTCCTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGGAG 60
                                                                                                                                                                                                                                                                                                                                                     |||::: ::: ||||||::||||||
81 TrpAsnIleTyrLysAspGlyAsnGlnCysGluThrGlnPro------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         511 ATTGATGGGAAGATGACCAGGCGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---GAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CICCECTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         568 TCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGG
                                                                                                                                     4C66C230D0758F6A CRC64;
                                                                                                                                                                                    469
162
74
157
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                                                                                                                                                                                                     Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00022; EGF_1; UNKNOWN_1.
PROSITE; PS01186; EGF_2; 2.
PROSITE; PS01187; EGF_CA; 1.
PROSITE; PS00011; GLU_CARBOXXLATION; 1.
PROSITE; PS00146; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_HIS; UNKNOWN_1.
Hydrolase; Serine protease.
                                                                                                                                                                                    Length:
                                                                                                                                                                                                                                                      Indels:
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                                                                                                                                     52196 MW;
                                                                                                                                                                                  4.39e-48
773.00
53.27%
36.57%
33.08%
                                                                                                                                   469 AA;
                                                                                                                                                                                                                                   Best Local Similarity:
                                                                                                                                                                                                                 Percent Similarity:
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982 CACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGC 1041
                                                                                                                                                                                                                                                                                                                                                             1162 CACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATC 1221
                                                                                                                                                                                                                                                                                                                                                                                                                         1102 TTCCACGGCACCTGGTTCCTGGTGGCCTGGTGAGCTGGGGTGAGGGCTGTGGGCTTCTT 1161
                                                                                                                                                                                                                                                                                                                                                                               384 ArgThrThrCysLysGlnSerSerSerPheAspIleThrProAsnMetPheCysAlaGly 403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ::: ::: ||||| |||||| ::: 292 LysLysAspSerSerGluMetAlaHisGluValGluLysvalIleValHisSerLysPhe 311
                                             748 AGCAAGAGCACCACCGACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGGCACCTC 807
                                                                            312 ValLysLysThrTyrAspPheAspIleAlaValIleLysLeuLysThrProIleThrPhe 331
                                                                                                           808 TCGCAGACCATAGTGCCCATCTGCCTCCGGACAGCGGCCTTGCAGAGCGCGGACTC--- 864
                                                                                                                               865 ---AATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGGGGCTACCACAGCAGCGGAGG 921
                                                                                                                                                                                          922 AAGGAGGCCAAGAGAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCG 981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Characterization of a cDNA encoding murine coagulation factor VII.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Thromb. Haemost, 75:481-487(1996).
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Idusogie E., Rosen E., Geng J.P., Carmeliet P., Collen D., Castellino F.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               446 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ...wwr.1996 (TrEMBLrel. 01, Created) 01-JUN-2002 (TrEMBLrel. 21, Last annot Coagulation factor VII. Mus m...
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InterPro; IPR000152; Asx_hydroxyl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Asx_hydroxyl.
Chymotrypsin.
Crystallin.
EGF-like.
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MEDLINE-96276538; PubMed-8701412;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLA_blood
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Interpro; IPR000561;
Interpro; IPR001881;
Interpro; IPR002383;
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SEQUENCE FROM N.A.
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R PRINTS; PRO0722; CHYMOTRYPSIN.

R PRINTS; PRO0722; CHYMOTRYPSIN.

R SMART; SM0001; GLABLOOD.

R SMART; SM00001; GEF_Like; 1.

R SMART; SM000001; GEF_Like; 1.

R SMART; SM00000; Tryp_SPC; 1.

R PROSITE; PS00010; ALDEHYDE_DEHYDR_CYS; UNKNOWN_1.

R PROSITE; PS00010; ASX_HYDROXYL; UNRNOWN_1.

R PROSITE; PS00012; GEC_L; 1.

R PROSITE; PS01187; EGE_CA; 1.

R PROSITE; PS01187; EGE_CA; 1.

R PROSITE; PS01013; EGE_CA; 1.

R PROSITE; PS01013; TRYPSIN_DOM; 1.

R PROSITE; PS01187; EGE_CA; 1.

R PROSITE; PS01184; TRYPSIN_ESE; 1.

R PROSITE; PS01184; TRYPSIN_ESE; 1.

R Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 TGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98 AsnVal------GlyThrCysGlnAspHisLeuLysSerTyrValCysPheCys 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241 CGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGC---TTCCTCAATTGCTCG 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        298 CTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCC---TGT 354
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   415 TTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGAC 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       174 TyrProCysGlyArg---IleProValValGluLysArgAsnSerSerArgGlnGly 192
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            203 GlyGluCysProTrpGlnAlaVal---LeuLysIleAsnGlyLeuLeuLeuCysGlyAla 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       81 AGCCTGTGCGGGGGACGCCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    355 AGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAG
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InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GiA.
Pfam; PF000009; BGF; 2.
Pfam; PF00594; gla; 1.
Pfam; PF00089; trypsin; 1.
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38.81%
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SEQUENCE 446
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946 ITCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGGGGGGGTCATG 1005
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---ATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTCGGG 1050
                   |||||||::
| 222 ValLeuLeuAspAlaArgTrpIleValThrAlaAlaHisCysPheAspAsnIleArgTyr 241
                                                                                                                               706 CIGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGAC 765
                                                                                                                                                                                                                                                                   886 CTCGTGACGGGCTGGGGCTACCACAGCGGGGGGAGAAGGAGGCCAAGAGAAACCGCACC 945
                                                                                                                                                                                                                                                                                                                                                                                                                          356 LysHisSerSerAsnThrProLysIleThrGluAsnMetPheCysAlaGlyTyrMetAsp 375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        376 GlyThrLysAspAlaCysLysGlyAspSerGlyGlyProHisAlaThrHisTyrHisGly 395
                                                                                     242 TrpGlyAsnileThrValValWetGlyGluHisAspPheSerGluLysAspGlyAspGlu 261
                                                                                                                                                               262 GlnvalArgArgValThrGlnvalIleMetProAspLysTyrIleArgGlyLysIleAsn 281
                                                                                                                                                                                                    AATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAGACCATAGTGCCC 825
                                                                                                                                                                                                                    321 ArgValSerGlyTrpGlyGlnLeuLeuAspArgGlyAlaThrAla------ 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            595 GTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAG--- 651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             652 -----AAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pan troglodytes (Chimpanzee).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Satta Y., "Comparison of DNA and protein polymorphims between humans and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last sequence update)
Last annotation update)
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EMBL; AB062470; BAB58885.1; --
EMBL; AB062458; BAB58885.1; JOINED.
EMBL; AB062466; BAB58885.1; JOINED.
EMBL; AB062464; BAB5885.1; JOINED.
EMBL; AB062464; BAB5885.1; JOINED.
EMBL; AB062466; BAB5885.1; JOINED.
EMBL; AB062466; BAB5885.1; JOINED.
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01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequ
01-MAR-2002 (TrEMBLrel. 20, Last anno
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73 GAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTCTGGTCCAAGCAC 132
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----CysLeu 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          193 GGGCACGCCACGTGCATCGACGCCATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGG 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |||||||::: |||::: :::|||:::
| 124 GluGlyLysAsnCysGluLeuAspValThr------CysAsnIleLysAsnGlyArg 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         370 TACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104 AsnGlyGlySerCysLysAspAspIleAsnSerTyrGluCysTrpCysProPheGlyPhe 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   253 GAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        313 IGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG---CGCTGTAGCTGTGCGCCTGGC 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 ValSerValSerGlnThrSerLysLeuThrArgAlaGluThrValPheProAspValAsp 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :::::: ::: ||| :::||||
201 TyrValAsnSerThrGluAlaGluThrIleLeuAspAsnIleThrGlnSerThrGlnSer 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            502 ------CCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCCTGG 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 221 PheAsnAspPheThrArgValValGlyGlyGluAspAlaLysProGlyGlnPheProTrp 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     550 CAGGIGGICCIGCIGGACICAAAGAAGAAGCIGGCCIGCGGGGCAGIGCICAICCACCC 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13 CTGGAGGAGCTCCGTCACAGCAGCCTGGAGCGGGAGTGCATAGAGGAGATCTGTGACTTC 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               72 GluGluAlaArgGluValPheGluAsnThrGluArgThrThrGluPheTrpLysGlnTyr 91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51764 MW; 30C2F857C0F77F45 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    461
151
71
71
156
46
                                                                                                                                                          Pfam: PF00008; EGF; 2.
Pfam: PF00008; EGF; 2.
Pfam: PF00089; Lrypsin: 1.
PROSITE: PS00010; ASX_HYDROXYL; UNKNOWN_1.
PROSITE: PS01080; EGF_1; UNKNOWN_1.
PROSITE: PS01180; EGF_2; UNKNOWN_2.
PROSITE: PS01180; EGF_2; UNKNOWN_1.
PROSITE: PS01181; EGF_CA; UNKNOWN_1.
PROSITE: PS001137; EGF_CA; UNKNOWN_1.
PROSITE: PS001137; TRYPSIN_DOM; 1.
PROSITE: PS00134; TRYPSIN_LOM; 1.
PROSITE: PS00134; TRYPSIN_LOM; 1.
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Indels:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
                                   InterPro; IPR000742; EGF_2.
InterPro; IPR001881; EGF_2.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IRR001254; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-763-153-1 (1-1245) x Q95ND7 (1-461)
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hydrolase; Serine protease.
SEQUENCE 461 AA; 51764 M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.1e-45
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52.36%
35.61%
31.66%
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   DR NO 
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958 TTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTG 1017
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1018 TCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGCGAC 1077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      014316 PRELIMINARY; PRT; 456 AA.
014316,
01-NOV-1996 (TrEMBLrel. 01, Created)
01-NUG-1999 (TrEMBLrel. 11, Last sequence update)
01-MUG-1999 (TrEMBLrel. 21, Last annotation update)
F9 (Coagulation factor IX, Plasma THROMBOPLASTIC component, christmas disease, HARMOPHILIA B)) (Factor IX).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---AlaLeuValLeuGln 370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 371 TyrLeuArgValProLeuValAspArgAlaThrCysLeuArgSerThrLysPheThrIle 390
610 TCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTT 669
                  280 GlyGluHisAsnIleGluGluThrGluHisThrGluGlnLysArgAsnValIleArglle 299
                                                                                                                                                                                                               784 CACCTGGCCCAGCCCGCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGC 843
                                                                                                                                                                                                                                    844 GGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGGGC 903
                                                                                                                                          730 TTCGTCCACCCCAACTACAGCAAGAGCACCAC-----GACAATGACATCGCACTGCTG 783
                                                                                                                                                                                                                                                                                                                       340 GluTyrThrAsnIlePheLeuLysPheGly-----SerGlyTyrValSerGlyTrpGly 357
                                                                                                                                                                                                                                                                                                                                                        904 -----TACCACAGCAGAGAGAAGAGGAGCCAAGAGAAACCGCACCTTCGTCCTCAAC 957
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-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE TAYPSIN FAMILY BLOA3403; CAA21954.1; -- EMBL; X55008; CAB38245.2; --
                                                                     670 GGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Reitsma P.A., Bertina R.M., Ploos van Amstel J.K., Riemens A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bird C.; Submitted (NOV-1998) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 3-19 FROM N.A. MEDLINE-88327116; PubMed-3416069;
                                                                                                                                                                                                                                                                                                                                                                                            358 ArgValPheHisLysGlyArgSer---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1198 CTCGACTGGATC 1209
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F9 OR FACTOR IX.
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370 TACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     73 GAGGAGGCCAAGGAAATTTCCAAAATGTGGATGACACACTGGCCTTCTGGTCCAAGCAC 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    133 GICGACGGIGACCAGIGCIIGGICIIGCCCIIGGAGCACCCGIGCGCCAGCCIGIGCIGC 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99 AsnGlyGlySerCysLysAspAspIleAsnSerTyrGluCysTrpCysProPheGlyPhe 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  253 GAGGGCCGCTTCTGCCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        313 TGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG----CGCTGTAGCTGTGCGCCTGGC 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   136 CysGluGlnPheCysLysAsnSerAlaAspAsnLysValValCysSerCysThrGluGly 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                156 TyrargLeuAlaGluAsnGlnLysSerCysGluProAlaValProPheProCysGlyArg 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                430 CCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGA-------471
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                                                                                                                                                                                                                                                                                                                                                                                                                                               Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----CysLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   193 GGGCACGGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               456 AA; 51149 MW; 54E20A1B3964E234 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                SMART; SMO020; TYP_SPC; 1.
PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.
PROSITE; PS00010; BGF_1; UNKNOWN_1.
PROSITE; PS01186; EGF_2; 2.
PROSITE; PS01187; EGF_CA: 1.
PROSITE; PS00011; GLG_CARBOXYLATION; 1.
PROSITE; PS00011; GLG_CARBOXYLATION; 1.
PROSITE; PS00011; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_LIS; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels:
                    MENOPS, SOLICAT,
INTERPRO, IPRO00151;
INTERPRO; IPRO00114; Chymotrypsin.
INTERPRO; IPRO001861; EGF-11ke.
INTERPRO; IPRO001861; EGF-2.
INTERPRO; IPRO01881; EGF-Ca.
INTERPRO; IPRO01881; EGF-II.
INTERPRO; IPRO01283; GLA_blood.
INTERPRO; IPRO00294; VITK_dep_GLA.
INTERPRO; IPRO00294; VITK_dep_GLA.
Pfam; PPO00089; EGF, 2.
Pfam; PPO0069; LTypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps:
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                                                                                                                                                                                                                  PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00010; EGFBLOOD.
PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                              PS00135; TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.16e-45
736.00
52.36%
35.38%
                                                                                                                                                                                                                                                                   SMART; SM00179; EGF_CA; 1.
                                                                                                                                                                                                                                                                                   SMART; SM00069; GLA; 1
SMART; SM00020; Tryp_S1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity:
           MEROPS; S01.214;
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                            196 TyrValAsnSerThrGluAlaGluThrIleLeuAspAsnIleThrGlnSerThrGlnSer 215
                                                                                                                                                                                                                                         GGAGAGTATGACCTGCGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTC 729
                                                                                                                                                                                                                                                          730 ITCGICCACCCCAACTACAGCAAGAGCACCACC-----GACAATGACAICGCACIGCIG 783
                                                                                                                                                                                                                                                                                                                     366 TyrLeuArgValProLeuValAspArgAlaThrCysLeuArgSerThrLysPheThr11e 385
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216 PheAsnAspPheThrArgValValGlyGlyGluAspAlaLysProGlyGlnPheProTrp
                                                                                                                   550 CAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCC
                                                                                                                                              236 GlnValVal---LeuAsnGlyLysValAspAlaPheCysGlyGlySerIleValAsnGlu
                                                                                                                                                                             510 TCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTT
                                                                                                                                                                                              784 CACCTGGCCCAGCCGCCACCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGC
                                                           ------CCGCGCCTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCTGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pan troglodytes (Chimpanzee).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Last sequence update)
Last annotation update)
   -----GACACAGAAGACCAAGAAGACCAAGTAGAT--
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          133 GTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCCAGCCTGTGCTGC 192
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CIGGAGGAGCICCGICACAGCAGCCIGGAGCGGGAGTGCATAAGAGGAGATCTGTGACTIC 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       313 TGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG----CGCTGTAGCTGTGCGCCTGGC
       "Comparison of DNA and protein polymorphims between humans and chimpanzees.";

cenes Genet. Syst. 0:0-0(2001).

EMBL; AB062471; BAB58886.1; -

EMBL; AB062459; BAB58886.1; JOINED.

EMBL; AB062465; BAB58886.1; JOINED.
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Matches:
Conservative:
Mismatches:
Indels:
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PROSITE; PSOGOTI, ASX.HYDROXYL; UNKNOWN_1.
PROSITE; PSOGOTS; EGF_1; UNKNOWN_1.
PROSITE; PSO1186; EGF_2; UNKNOWN_2.
PROSITE; PSOGOTIS; EUL_CABOXYLATION; UNKNOWN_1.
PROSITE; PSOGOTI; GLU_CABOXYLATION; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                         UNKNOWN_1
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InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
Pfam; PF00008; EGF; 2.
Pfam; PF00594; gla; 1.
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                                                                                                                                                             InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00134; TRYPSIN_HIS; PROSITE; PS00135; TRYPSIN_SER;
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1078 AGTGGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGACC 1137
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358 ArgValPheHisLysGlyArgSer--------------------------AlaLeuValLeuGln 370
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240 Arg***ValValLeuAsnGlyLysValAspAlaPheCysGlyGlySerIleValAsnGlu 259
                                                                                                                                                                                                                                                                        260 LysTrpIleValThrAlaAlaHisCysValAspThrGlyValLysIleThrValValAla 279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             784 CACCTGGCCCAGCCGCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGC 843
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                                                                                                                                                               550 CAGGIGGICCIGCIGGACICAAAGAAGAAGCIGGCCIGCGGGGCAGIGCICAICCACCCC 609
                                                                                                                                                                                                                                              610 TCCTGGGTGCTGACAGCGGCCCACTGCATGAGTCCAAGAAGCTCCTTGTCAGGCTT 669
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                                                                                                                                                                                                                                                                                                                                                                                                            730 TTCGTCCACCCCAACTACAGCAAGAGCACCACC----GACAATGACATCGCACTGCTG 783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    340 GluTyrThrAsnIlePheLeuLysPheGly-----SerGlyTyrValSerGlyTrpGly 357
---GACCAAGAA 489
                                        201 TyrValAsnSerThrGluAlaGluThrIleLeuAspAsnIleThrGlnThrProGlnSer 220
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Palaeognathae; Struthioniformes; Struthionidae;
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*********#ThrArg***ValGlyGluAsp***AsnProGlyGlnTyrPro---
                                                                                 490 GACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGACAGCCCCTGG
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01-MAY-2000 (TrEMBLrel. 13, Last sequ
01-MAR-2002 (TrEMBLrel. 20, Last anno
    -----CGAGACACAGAA-----
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TISSUE=LIVER;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                48 PheLeuGluGluMetLeuLysGlyAsnLeuGluArgGluCysLeuGluGluIleCysIle 67
             Τ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :::||||||||| ||| || :::::
68 TyrGluGluAlaPheGluAlaLeuGluSerThrAlaArgThrGluGluPheTrpSerLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----GTCGACGGT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10 TICCIGGAGGAGCICCGICACAGCAGCCIGGAGCGGGAGIGCATAGAGGAGAICTGTGAC
                                                           THE
              Ogawa
         Frost C., Naude R., Oelofsen W., Muramoto K., Naganuma T., Oga "Purification and characterization of ostrich prothrombin."; Int. J. Blochem. Cell Biol. 32:1151-1159(2000).
--- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS TRYPEIN FAMILY.
EMBL; AB028871; BAA89046.1; ---
HSSP; P00734: 1UVS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69392 MW; 11B974B9AEE54EA2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           142 GACCAGTGCTTGGTCTTGCCCTTGGAGCACCCG-----
                                                                                                                                                                                                                                                                                                                              SMART; SM00069; GLA; 1.

SMART; SM00130; KR; 2.

SMART; SM00130; KR; 2.

SMART; SM00130; TK; 2.

PROSITE; PS00011; GLU_CARBOXYLATION; 1.

PROSITE; PS50070; KRINGLE_1; 2.

PROSITE; PS5040; TRYPSILL_DOM; 1.

PROSITE; PS00134; TRYPSILL_DOM; 1.

PROSITE; PS00135; TRYPSILL_DOM; 1.

PROSITE; PS00135; TRYPSILL_SER; 1.

Hydrolase; Serine protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels:
                                                                                                                                                                        InterPro; IPR000001; Kringle.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-763-153-1 (1-1245) x Q9PTW7 (1-608)
MEDLINE=20579470; PubMed=11137455;
                                                                                                                                         InterPro; IPR001314; Chymotrypsin.
InterPro; IPR002383; GLA_blood.
                                                                                                                                                                                                                                                                   PRINTS; PRO0722; CHYMOTRYPSIN.
PRINTS; PRO0001; GLABLOD.
PRINTS; PRO0018; KRINGLE.
ProDom; PD000395; Kringle; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5.15e-30
525.00
39.00%
28.44%
                                                                                                                                                                                                                   Pfam; PF00594; gla; 1.
Pfam; PF00051; kringle; 2.
Pfam; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           608 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity:
                                                                                                                           MEROPS; S01.217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAC----
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Best Local Similari
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
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PROSITE;
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                                                                                                                                         1048 GGGGAC-----CGGCAGGATGCCTGCGAGGCGACAGTGGGGGGCCCATGGTC--- 1095
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  988 GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTC 1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       642
                                                                                                                                                                                                                                           481 GACCAAGAAGACCAAGTAGATCCGCGCCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ||||||| ::: :::|||||| |||::: 422 GluLysAsnLysGluLysIleAlaLeuLeuAspLysIleIleIleHisProLysTyrAsn 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           521 ThrCysLysAlaSerThrLysValLysValThrAspAsnMetPheCysAlaGlyTyrSer 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------GGCACGTGCATCGACGCCATCGGCAGCTTCAGC 231
                                                                                             228 CysLeuProTrpAsnSerGluLysAlaLysGluValLeuGlnGlyLysThrIleIleThr 247
                                                                                                                                                                                                    268 CysValThrAspGluProProHisPheGluTyrCysAspLeuGlnTyrCysAspSerSer 287
                                                                                                                                                                                                                                                                                                       306 GluTyrLysThrPhePheAspAsp-----LysThrPheGlySerGlyGluAlaAspCys 323
                                                                                                                                                                                                                                                                                                                                                           324 GlylleArgPro-----LeuPheGluLysLysLysLleLysAspLysSerGluLysGlu 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              382 LeuIleSerAspSerTrpValLeuThrAlaAlaHisCysLeuTyrTyrProProTrpAsp 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              402 LysAsnLeuThrThrAsnAspIleLeuValArgIleGlyLysHisPheArgAlaLysTyr 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          694 GAGAAGTGGGAGCTGGACCTGGAC---ATCAAGGAGGTCTTCGTCCACCCCAACTACAGC 750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           751 ---AAGAGCACCACCACCAATGACATGGCACTGCTGCACCTGGCCCAGCCGGCCACCTC 807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             808 TCGCAGACCATAGTGCCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGAGCTCAAT 867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              188 GluArgThrThrValGluPheThrProArgValLysProProAlaSerThrGluProCys 207
                                                                                                                                                                                                                                                                                                                                                                                                         342 LeuLeuGluSerTyrIleGlySerArgValValHisGlyAspAspAlaGluValGlySer
                                                                                                                                                                                                                                                                                                                                                                                                                                     541 AGCCCCTGGCAGGTGGTCCTGCTG---GACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTCATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATG------GAT
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| LeualaGlyTyrLysGlyArgValThrGlyTrpGlyAsnLeuLysGluThrTrpAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 208 GluGlnGluLysGlyMetLeuTyrAlaGlyThrLeuSerValThrileSerGlyAlaLys
                                                                         232 TGC------GACTGCCGCAGCGGCTGGGGAGGCCGCTTCTGCCAGCGC
                                                                                                                                                  248 GluValLysLeuLeuGluAsnTyrCysArgAsnProAspAlaAspAspGluGlyValTrp
                                                                                                                                                                            ----CTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGTGCGCCTT
                                                                                                                                                                                                                                                                                367 GGCTACAAG----CTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGT
                                                                                                                                                                                                                                                                                                                                   424 GGG---AGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       643 GAG------TCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGG
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                                                                                                                          274 GAGGTGAGCTTCCTCAAT--
                        199 -----
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Banfield D.K., Irwin D.M., Walz D.A., MacGillivray R.T.; "Evolution of prothrombin: isolation and characterization of the cDNAs encoding chicken and hagfish prothrombin."; J. Mol. Evol. 38:177-187(1994).
1096 ---GCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGCTGT 1152
                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Banfield D.K., MacGillivray R.T.; "Partial characterization of vertebrate prothrombin cDNAs: amplification and sequence analysis of the B chain of thrombin from
                                                                                                                     GGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                                                                                                                                              581 AspargaspGlyLysTyrGlyPheTyrThrHisValPheArgLeuLysLysTrpIle 599
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Banfield D.K.;
Submitted (DEC-1991) to the EMBL/GenBank/DDBJ databases.
EMBL; M81391; AAA21619.1; -.
HSSP; P00734; 1UVS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    002F3606EA36270F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1996 (TrEMBLrel. 01, Last sequence update) 01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           nine different species.";
Proc. Natl. Acad. Sci. U.S.A. 89:2779-2783(1992)
                                                                                                                                                                                                                                                                                                      607 AA.
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InterPro; IPR001383; GLA_blood.
InterPro; IPR001383; GLA_blood.
InterPro; IPR001966; Prothrombin.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR001294; Vitk_dep_GLA.
Pfam; PF000594; glas; 1.
Pfam; PF00089; trypsin; 1.
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PROSITE; PS00134; TRYPSIN_HIS; UNKNOWN_1
PROSITE; PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMART; SM00069; GLA; 1.
SMART; SM00130; KR; 2.
SMART; SM00130; KR; 2.
FPROSITE; PS00010; TTYP_SPC; 1.
PROSITE; PS00011; GLU_CARBOXILATION;
PROSITE; PS00021; KRINGLE_1; 2.
                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                      PRT;
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MEDLINE=94223694; PubMed=7513365;
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PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       69110 MW;
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PRINTS; PR01505; PROTHROMBIN.
ProDom; PD000395; Kringle; 2.
                                                                                                                                                                                                                                                                                                                                                                   01-NOV-1996 (TrEMBLrel. 01,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hydrolase; Serine protease.
SEQUENCE 607 AA; 69110 M
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                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Thrombin.
Gallus gallus (Chicken).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9031;
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1. Nat. E O B O B O B E B A B A B A B A B A A A A A A A O I O Z O	Scores: 4.56e-29 Length: 607 512.00 Matches: 156 nilarity: 39.25% Conservative: 65 Similarity: 27.71% Mismatches: 168 n: 21.91% Indels: 20 153-1 (1-1245) x Q91001 (1-607)	TCCTGGAGGAGCTCCGTCACAGCCAGCC	TyrGluGluAlaPheGluAlaLeuGluSerThrValAspThrAspAlaPheTrpAlaLys 87 CAC	51nValCysGlnGlyThrLysMetProArgThrThrLeuAspAlaCysLeuGluGly 10	GTCGACGGT 141 ASnCysAlaAlaAsnLeuGlyGlnAsnTyrArgGlyThrIleAsnTyrThrLysSerGly 127	CCAGTGCTTGGTCTTGGAGCACCCG	iraciacyscinvalityiniscinystyiriconistiariohysricasonalascinte 14/	TyrProAspLeuThrGluAsnTyrCysArgAsnProAspAsnAsnSerGluGlyProTrp 167		. 2	::::: GluArgThrThrValGluPheThrProArgValLysProSerThrThr 203	GGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300 ::: ::: GlyGlnProCysGluSerGluLysGlyMetLeuTyrThrGlyThrLeuServalThrVal 223	GACAACGCGCGCTGC 315	SerGlyAlaArgCysLeuProTrpAlaSerGluLysAlaLysAlaLeuLeuGlnAspLys 243	ThrileAsnProGluValLysLeuLeuGluAsnTyrCysArgAsnProAspAlaAspAsp 263	GAGGIGGCCGGCGCGCTGTAGCTGTGCGCCTGGCTACAAGCTGGGGAC 384 	GTCACCCGCAGTG	spLeuHisTyrCysAspSerSerL	411	GlyArgThrIlePheGlnGluPheLysThrPhePheAspGluLysThrPheGlyGluGly 319	AAGTICCCTIGIGGGAGGCCCIGGAAGCGGAIGGAGAAGAAGCGCAGICACCIGAAA 468 :::	5.2	AAGTAGATCCGCGGCTCATTGATGGGAAGATGACC
Alignmen Pred. No Score: Coroci Coroc	t Scores: .: Similarity: al Similarity tch: 3-153-1 (1-12			œ		Z GA		48 TyrProAspLeu			 88 GluArgThrTh1	56 GGCCGCTTCTGC ::: 04 GlyGlnProCys	01 GACAACGGCGG	S.	9 4	4 4	'n	-		300 GlyArgThrIle	0 7	σ	69 CGAGACACAGAA

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976 GTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGT 1035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1087 CCCATGGTCGCCTCC----TTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG 1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1141 GGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTC 1200
                                                         639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               536
                                                                                                                                    398 ProProTrpAspLysAsnLeuThrThrAsnAspIleLeuValArgMetGlyLeuHisPhe 417
                                                                                                                                                                                                    796 CCCGCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGCCTTGCAGAG 855
                                                                                                                                                                                                                                                                                                                     856 CGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGGGGGCTACCACAGCAGC 915
                                                                                                                                                                                                                                                                                                                                                                             916 CGAGAGAAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCAAGATTCCCGTG 975
                                                                                                                                                                                                                                                                                                                                                                                                                                          ||| ||| ||| ||| 557 ProPheValMetLysAsnProAspAspAsnArgTrpTyrGlnValGlyIleValSerTrp 576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 529 AGGCGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTG---GACTCAAAGAAGAAGTGGCC 585
                 ------GATGAG------TCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGAC 681
                                                                                                                                                                                682 CTGCGGCGCTGGGAGAAG---TGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCAC 738
                                                                                                                                                                                                                                                                   438 ProlysTyrAsnTrpLysGluAsnMetAspArgAsplleAlaLeuLeuHisLeuLysArg 457
                                                                                                                                                                                                                                        CCCAACTACAGC --- AAGAGCACCACCGACAATGACATCGCACTGCTGCACCTGGCCCAG 795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-CS7BL/GJ; TISSUE=LIVER;
MEDLINE=21085660; PUDMed-11217851;
Kawai J., Shinagawa A., Shibata K., Yoshino M., Itoh M., Ishii Y.,
Arakawa T., Hara A., Fukunishi Y., Konno H., Adachi J., Fukuda S.,
Aizawa K., Izawa M., Nishi K., Kiyosawa H., Kondo S., Yamanaka I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Butheria; Rodentia; Sciurognathi; Muridae; Musinae; Mus.
NCBI_TaxID=10090;
                                                           TGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            O9DBIO;
01-JUN-2001 (TrEMBLrel. 17, Created)
01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
1300008A22Rik protein.
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SEQUENCE FROM N.A.
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                             358
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Radota T., Okazaki Y., Gojobori T., Bono H., Kasukawa T., Saito R.,
Radota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
Releischmann W., Gaasterland T., Gissi C., King B., Rochiwa H.,
Ruehl P., Lewis S., Matsuo Y., Mikaido I., Pesole G., Quackenbush J.,
Schriml L., M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
Sakai K., Okido T., Furuno M., Aono H., Baldarelli R., Barsh G.,
Blake J., Boffelli D., Bojunga N., Carninci P., de Bonaldo M.F.,
Brownstein M.J., Bult C., Fletcher C., Fujita M., Gariboldi M.,
Gustincich S., Hill D., Hofmann M., Hume D.A., Kamiya M., Lee N.H.,
Lyons P., Marchionni L., Mashima J., Mazzarelli J., Mombaerts P.,
Nordone P., Ring B., Ringwald M., Rodriguez I., Sakamoto N.,
Sasaki H., Sato K., Schoenbach C., Seya T., Shibata Y., Storch K.-F.,
Whynshaw-Booris A., Yoshida K., Hasegawa Y., Kawaji H., Kohtsuki S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---CysAspArgGlnProAspCysLeuAsnGlySerAspGluGluGlnCysGlnGluGly 516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178 GCCAGCCTGTGCGGGCACGCACGTGCATC-----GACGCCATCGCAGCTTC 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      349 CGCTGTAGCTGTGCGCCTGGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCGGCA 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  118 TTCTGGTCCAAGCACGTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGC 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 289 AATTGCTCGCTGGACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGG
                                                                                                                                                                                                                                                                                                       Nature 409:685-690(2001).
-!- SIMILARITY: CONTAINS 1 CUB DOMAIN.
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   484 GlnCysGlnGluAspSer----ThrCysIleSerLeuProArgVal-----
                                                                                                                                                                                                                                                                      Hayashizaki Y.; "Functional annotation of a full-length mouse cDNA collection.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glycoprotein; Hydrolase; Serine protease.
SEQUENCE 799 AA; 89557 MW; 16315A646A4D5288 CRC64;
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137
52
141
63
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Mismatches:
Indels:
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Matches:
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PROSITE; PS50068; LDLRA_2; 3.
PROSITE; PS50240; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_HS; UNKNOWN_1.
PROSITE; PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR001314; chymotrypsin.
InterPro; IPR001859; CUB_domain.
InterPro; IPR002172; LDL_recept_A.
InterPro; IPR001254; Ser_protease_Try.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-763-153-1 (1-1245) x Q9DBIO (1-799)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRINTS: PRO0722; CHYMOTREPSIN.
PRINTS: PRO0261; LDLRECEPTOR.
SMART; SM00042; CUB, 1.
SMART; SM000192; LDLa; 3.
SMART; SM00020; Tryp_SPC; 1.
PROSITE; PS01180; CUB; 1.
PROSITE; PS01180; LDLRA_1; 1.
PROSITE; PS00068; LDLRA_1; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                     MEROPS; S01.308; -.
MGD; MGI:1919003; 1300008A22Rik
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF00057; ldl_recept_a; 2.
Pfam; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AK004939; BAB23684.1; -. HSSP; P00763; 1DPO.
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510.50
48.09%
34.86%
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best Local Similarity:
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DB:
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1054 CGGCAGGATGCCTGCGAGGGCGACAGTGGGGGCCCCATGGTCGCC---TCCTTCCACGGC 1110
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      994 AGCGAGGICAIGAGCAACAIGGIGICIGAGAACAIGCIGIGIGCGGGCAICCICGGGGAC 1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           722 SerGluAlaTyrArgTyrGlnValSerProArgMetLeuCysAlaGlyTyrArgLysGly 741
                                                                                                                                                                                                                                                          645
                                                                                                                                                                                                                                                                                                                                                     612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            314 ACCATAGTGCCCATCTGCCTCCGGACAGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCC 873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            874 GGCCAGGAGCCCTCGTGACGGGCTGGGGCTACCACAGCAGCCGAGAGAAGGAGGCCAAG 933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        934 AGAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGC 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             705 SerAsn-----ThrLeuGlnLysValAspValGlnLeuValProGlnAspLeuCys 721
409 GIGAAGTICCCITGIGGGAGGCCCIGGAAGCGGAIGGAGAAGAAGAGCGCAGICACCIGAAA 468
                                                                                                               534 LysProAsnProGluCysAspGlyGlnSerAspCysArgAspGlySerAspGluGlnHis 553
                                                                                                                                                                                                                                                                                                                                                                                          ---TCCAAGAAGCTC---CTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAG 699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        700 TGG-----GAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCCAACTACAGCAAG 753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    754 AGCACCACCGACAATGACATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTCTCGCAG 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   687 GlyGlnHisCysTrpIleThrGlyTrpGly-----AlaGlnArgGluGlyGlyProVal 704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Musinae; MusinZEI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                      |||||||
593 AlaLeulleAlaAspArgTrpValIleThŕAlaAlaHisCysPheGlnGluAspSerMet
                                  517 Val-----ProcysGlyThrPheThrPheGlnCysGlu---AspArgSerCysValLys
                                                                            -----GACACAGAGACCAAGAAGACCAA-----
                                                                                                                                                        ---GTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGG
                                                                                                                                                                                           554 CysAspCysGlyLeuGlnGlyLeuSerSerArgIleValGlyGlyThrValSerSerGlu
                                                                                                                                                                                                                                  GGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGGCCTGCGGGGCA
                                                                                                                                                                                                                                                                                                              GTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCCACTGCATGGATGAG------
                                                                                                                                                                                                                                                                                                                                                                                                                                   613 AlaSerProLysLeuTrpThrValPheLeuGlyLys-----MetArgGlnAsnSerArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAR-2002 (TrEMBLrel. 20, Created)
1-MAR-2002 (TrEMBLrel. 20, Last sequence update)
01-UNA-2002 (TrEMBLrel. 21, Last annotation update)
Hypothetical 70.6 kDa protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       782 GlyValTyrThrArgValThrArgVallleAsnTrpIle 794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  653 AA
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                                                                                469 CGA---
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43 CGGGAGTGCATAGAGGAGATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTG 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          103 GATGACACTGGCCTTCTGGTCCAAGCACGTCGACGGT-----GACCAGTGCTTGGTC 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190 TGCGGGCACGCACGTGC----ATCGACGCCATCGGCAGCTTCAGCTGCGACTGCCGC 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            211 GlyAsp------HisTrpAlaArgValSerGluGlyHisValGluGlnCysGlyCys 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MetGluGlyGlnAlaArgCysGluAspThrHisHisThrAlaCysLeuSerSerProCys 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuGlyTyrAlaGlyArgPheCys---AsnIleValProThrGluHisCysPheLeuGly 286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     244 AGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGAC 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  309
                                                       to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          70553 MW; FE18D90174ED6FDD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     653
136
67
116
119
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Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                           SWART; SMO0020; Tryp_SPC; 1.
PROSITE; PS001021; EGE_1; URKNOWN_1.
PROSITE; PS01106; EGE_2; URKNOWN_1.
PROSITE; PS01263; FIBRONECTIN_1; UNKNOWN_1.
PROSITE; PS00023; FIBRONECTIN_2; UNKNOWN_1.
PROSITE; PS000021; FRINGLE_1; UNKNOWN_1.
PROSITE; PS50070; KRINGLE_2; 1.
PROSITE; PS00134; TRYPSIN_LOW; 1.
PROSITE; PS00134; TRYPSIN_LIS; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                             InterPro; IPR000562; FN_Type_II.
InterPro; IPR000001; Kringle.
InterPro; IPR001254; Ser_protease_Try.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-763-153-1 (1-1245) x Q8VCS4 (1-653)
                                                                             InterPro; IPR001314; Chymotrypsin.
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                           ProDom; PD000395; Kringle; 1.
ProDom; PD000995; FN_Type_II; 1.
                                                                                                                                                                                                                             Pfam; PF00051; kringle; 1.
Pfam; PF00089; trypsin; 1.
PRINTS; PR0072; CHYMOTRYPSIN.
PRINTS; PR00010; EGFBLOOD.
PRINTS; PR00013; FNTYPEII.
PRINTS; PR00018; KRINGLE.
                                                                                                           InterPro; IPR000742; EGF_2.
InterPro; IPR001438; EGF_II.
InterPro; IPR000083; Fibrnctn1.
                                                                EMBL; BC019376; AAH19376.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.49e-26
477.50
41.60%
27.87%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AACGGC-------
                                                                                                                                                                                                                                                                                                                                      SMART; SM00181; EGF; 2.
SMART; SM00058; FN1; 1.
SMART; SM00059; FN2; 1.
SMART; SM000130; KR; 1.
SMART; SM00020; Tryp_SPc
                                                                                                                                                                                   Pfam; PF00008; EGF; 2
Pfam; PF00039; fnl; 1
Pfam: PF00040; fn2; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             al protein.
653 AA; 7
                                                     (DEC-2001)
                                                                                                         InterPro; IPR000742;
[1]
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity:
                                          Strausberg R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Appothetical
                          LISSUE=LIVER
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982 CACAATGAGTGCAGC-----GAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGT 1035
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1096 GCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGGGGTGAGGCTGTGGG 1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1156 CTCCTTCACAACTACGCGTTTACACCAAAGTCAGCGGTACCTCGACTGGATGGG 1215
                                                                                                                      310 -------GGCTGCACGCATTACTGCCTA------330
                                                                              307 TrpAsnSerAspLeuLeuTyrGlnGluLeuHisValAspSerValAlaAlaAlaValLeu 326
                                                                                                                                                           327 LeuGlyLeuGlyProHisAlaTyrCysArgAsnProAspLysAspGluArgProTrpCys 346
                                                                                                                                                                                                                                          347 TyrValValLysAspAsnAlaLeuSerTrpGluTyrCysArgLeuThrAlaCysGluSer 366
                                                                                                                                                                                                                                                                                                                      367 LeuAlaArgValHisSerGlnSerProGluIleLeuAlaAlaLeuProGluSerAlaPro 386
                                                                                                                                                                                                                                                                                                                                                                                                   387 AlaValArgProThrCysGly-----LysArgHisLysLysArgThrPheLeu 402
                                                                                                                                                                                                                                                                                                                                                                                                                                        166 AAACGAGACACAGAAGACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATG 525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     326 ACCAGGCGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCC 585
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                                                                                                                                                                                                                                                                                                                                                              GCAGTGAAGTTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGAAGCGCAGTCACCTG 465
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                802 ACCTCTCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGAG 861
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               862 CTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGGGGGCTACCACCAGCAGCCGAGAG 921
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562 AspHisLysCysSerSerProGluValTyrGlyAlaAspIleSerProAsnMetLeuCys 581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            922 AAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCG 981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             697 AAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           527 ---PheProThrGlyHisLysCysGlnIleAlaGlyTrpGlyHisMetAspGluAsnVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                646 TCC-----AAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           190 AsnProAsnAsnHisAspLeuValLeuIleArgLeuLysLysLysGlyGluArgCysAla
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RACTORNEL FORMAN AND LIVER;

RA MEDILINE=2108566; PubMed=11217851;

RA Arakawa T., Shipata K., Yoshino M., Itoh M., Ishii Y.,

RA Arakawa T., Hara A., Fukunishii Y., Konno H., Adachi J., Fukuda S.,

RA Arakawa T., Hara A., Fukunishii Y., Konno H., Adachi J., Fukuda S.,

RA Arakawa T., Bara A., Shibata K., Kiyosawa H., Kondo S., Yamanaka I.,

RA Arakawa T., Sarait Y., Golobori T., Bono H., Kasikawa T., Saito R.,

RA Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,

RA Fischmann W., Gaasterland T., Gissi C., King B., Kochiwa H.,

RA Kuchl P., Lewis S., Matsuo Y., Nikaido I., Pesole G., Quackenbush J.,

RA Schriml L.M., Staubii F., Suzuki R., Tomita M., Wagner L., Washio T.,

RA Sakai K., Okido T., Furuno M., Aono H., Baldarelli R., Barsh G.,

RA Blake J., Boffelli D., Bojuga N., Carninci P., de Bonaloo M.F.,

RA Brownstein M.J., Bult C., Fletcher C., Fujita M., Gariboldi M.,

RA Uyons P., Marchinoni L., Mashima J., Mazerelli J., Mombaerts P.,

RA Suzuki H., Sato K., Schoenbach C., Seya T., Shibata Y., Storch K.-F.,

RA Wynshaw-Boris A., Yoshida K., Hasegawa Y., Kawaji H., Kohtsuki S.,

RT "Functional annotation of a full-length mouse cDNA collection.",
622 ArgLeuAsnLysProGlyValTyrThrArgValAlaAsnTyrValAspTrpIleAsnAsp 641
                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -i- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE
                                                                                                                                                              0900W3;
01-JUN-2001 (TrEMBLrel. 17, Created)
01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
1300015B06Rik protein.
                                                                                                                                                          399 AA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
                                     1216 CACATCAGAGACAAGGAAGCCCCC 1239
                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SMART; SM00179; EGF_CA; 2.
SMART; SM00069; GLA; 1.
SMART; SM00000; Tryp_SPC; 1.
PROSITE; PS00010; Txyp_SPC; 1.
PROSITE; PS00022; EGF_LI; UNKNOWN_I.
PROSITE; PS00022; EGF_LI; UNKNOWN_I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MGD; MGI:1914151; 1300015B06R1K.
InterPro; IPR000152; Asx.hydroxyl.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR000561; EGF-11ke.
                                                                            642 ArglleArgProProLysArgPro 649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE; PS00011; GLU_CARBOXYLATIC PROSITE; PS50240; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR000742; EGF_2.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR002383; GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRINTS; PRO0722; CHYMOTRYPSIN.
PRINTS; PRO0001; GLABLOOD.
SMART; SM00181; EGF; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hydrolase; Serine protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   trypsin; 1.
                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                Mus musculus (Mouse)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00594; gla; 1
Pfam; PF00089; trypsi
                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
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                                                                                                                 RESULT 19
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70 ITCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGGATGACACACTGGCCTTCTGGTCCAAG 129
                                                                                                                                                                                                                                                                                                                                                                  130 CACGTCGACGGTGACCAGTGCTTGGTCTTGCAGCACCCGTGCGCCAGCCTGTGC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                          190 TGCGGGCACGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGC 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97 LeuAsnAsnGlyThrCysGluAspHisIleArgSerTyrSerCysThrCysSerProGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  250 TGGGAGGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGAC---AAC 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        :::|||||||::: |||
117 TyrGluGlyLysThrCysAlaMetAlaLysAsn-----GluCysHisLeuGluArgThr 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          307 GGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGTGCGCCT 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              135 AspGlyCysGlnHisPheCysHisProGlyGlnSerSerTyrMetCysSerCysAlaLys 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     367 GGCTACAAGCTGGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGG 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          427 AGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAAGACCAA 486
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        175 ------AlaLeuThrSerGluHisIle-------181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  191 ProSerPheProTrpGlnValArgLeuThrAsnSerGluGlyGluAspPheCysAlaGly 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10 TICCIGGAGGAGCICCGICACAGCCAGCCTGGAGCGGGAGTGCAIAGAGGAGATCTGTGAC 69
                                                                                                                                                                                                                                           65 TyrGluGluAlaArgGluValPheGluAsnAspValIleThrAspGluPheTrpArgGln 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           544 ------CCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCA 594
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                                                                                                                                                                                                                                                                                                                                                                                                       595 GTGCTCATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAG 654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            231 IleservalLys---AlaAsnValAspGlnArg------------------------11e 241
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242 ArgileLysSerThrHisValHisMetArgTyrAspGluGluSerGlyGluAsnAspVal 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       775 GCACTGCTGCACCTGGCCCAGCCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTC 834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               :::|||||| ||| :::|||
262 SerLeuLeuGlnLeuGluGluFroLeuGlnCysProSerSerGlyLeuProValCysVal 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   282 ProGluArgAspPheAlaGluHisValLeu---IleProGlyThrGluGlyLeuLeuser 300
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 4FC85C9598F27E03 CRC64;
                                                          399
126
58
58
143
94
                                                                                               Conservative:
                                                                                                               Mismatches:
Indels:
                                                                            Matches:
                                                          Length:
                                                                                                                                                  Gaps:
                                                                                                                                                                           US-09-763-153-1 (1-1245) x Q9CQW3 (1-399)
399 AA; 44304 MW;
                                                  4.85e-26
470.00
43.71%
29.93%
20.11%
                                                                                                         Best Local Similarity:
                                                                                       Percent Similarity:
                                   Alignment Scores:
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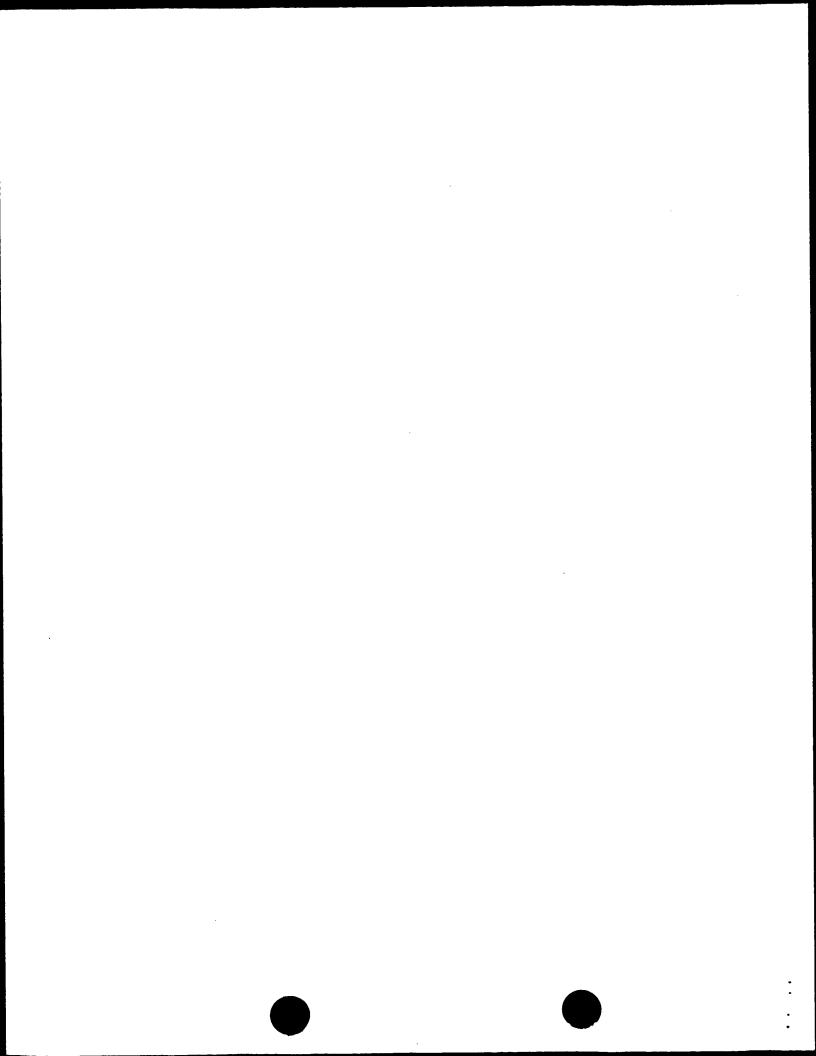
Tue Mar 18 16:19:34 2003

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RA MEDLINE-20196006; PubMed=10/3132;
RA Adams N.D., Celniker S.E., Holt R.A., Evans C.A., Gocayne J.D.,
RA Adams W.D., Celniker S.E., Holt R.A., Evans C.A., Gocayne J.D.,
RA Amanatides P.G., Scherer S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA George R.A., Lewis S.E., Richards S., Ashburner M., Henderson S.N.,
RA Sutton G.G., Wortman J.R., Yandell M.D., Zhang Q., Chen L.X.,
Brandon R.C., Rogers Y.-H.C., Balazej R.G., Champe M., Pfeiffer B.D.,
RA Wan K.H., Doyle C., Baxter E.G., Helt G., Nelson C.R., Miklos G.L.G.,
Ballew R.M., Basu A., Baxendale J., Bayraktaroqlu L., Beasley E.M.,
Basu A.D., Botchan M.R., Bouck J., Brokstein P., Brottier P.,
Borkova D., Botchan M.R., Bouck J., Brokstein P., Brottier P.,
Borkova D., Botchan M.R., Bouck J., Brokstein P., Brottier P.,
Burtis K.C., Busam D.A., Butler H., Cadieu E., Center A., Chadra I.,
Burtis K.C., Busam D.A., Butler H., Cadieu E., Center R., Charler A.,
Borkova D., Botcher A., Dong Z., Mays A.D., Dew I., Dietz S.M.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Dodson K., Doup L.E., Downes M., Dugan-Rocha S., Dunkov B.C., Dunn P.,
RA Fosler C., Gabrielian A.E., Garg C.C., Ferraz C., Ferriera S., Fleischmann W.,
RA Harris N.L., Harvey D., Heiman T.J., Hernandez J.R., Houck J.,
RA Jalali M., Kalush F., Karpen G.H., Re Z., Kennison J.A., Ketchum K.A.,
RA Jalali M., Kalush F., Karpen G.H., Re Z., Kennison J.A., Mattei B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Merkulov G., Milshina N.V., Mobarry C., Morris J., Moshrefi A.,
RA Merkulov G., Milshina N.V., Mobarry C., Morris J., Woshrefi A.,
RA Reinert K., Remington K.,, Naxon K., Nusskern D.R., Pacleb J.M.,
RA Reinert K., Remington K.,, Saunders R.D.C., Scheeler F., Shen H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                      1144 GAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGAC 1203
                                                                                                                                                    988 GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGT------GCG 1038
                                                                                                                                                                                                                                                                                                                                            1099 TCCTTCCAC---GGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGG-------GGT 1143
                                                                                                                                                                                                                                                 1039 GGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGGCCCATGGTCGCC 1098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Arthropoda; Tracheata; Hexapoda; Insecta;
Pterygota; Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
                                                                                                                                                                                                                                                                                                                                                                     345 ValvalMetGlyProTrpValGlu--------GlySerValvalThr 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      305 AsnGlyThrHisLeuAlaThrThrProMetLeuLeuSerValThrGlnAlaAspGlyGlu 324
          ----- 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAY-2000 (TrEMBLrel. 13, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT; 1379 AA.
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                    301 GlyTrp-------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=7227;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CG2105 protein.
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926 ArgCysGlyProAspGluIleTyrCysGlyAspSerGlnCysIleGlyThrLysHisIle 945
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   268 CAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGCTGCACGCATTACTGC 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       906 GluTyrValCysAspGlyHisLeuAspCysMetAspGlnAlaAspGluAlaLysCysGlu 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         178 -------GCCAGCCTGTGCTGCGGCACGGCACGTGCATC------- 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             211 ---GACGGCATCGGCAGCTTCAGCTGCGACTGCGCAGCGGCTGGGAGGGCCGCTTCTGC 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             115 GCCTTCTGGTCCAAGCACGTCGACGGTGACCAGTGC-----TTGGTCTTGCCCTTG 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               886 AlaalaThrHisProLysCysAspGlyPheGlnCysAspGlnAsnArgCysLeuProGln 905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         55 GAGGAGATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTG 114
Shue B.C., Siden-Kiamos I., Simpson M., Skupski M.P., Smith T., Spier B., Spradling A.C., Stapleton M., Strong R., Sun E., Svirskas R., Tector C., Turner R., Venter E., Wang A.H., Wang X., Wang S.-Y., Wassarman D.A., Weinstock G.M., Weissenbach J., Williams S.M., Woodage T., Worley K.C., Wu D., Yang S., Yao Q.A., Ze J., Yeh R.-F., Zaveri J.S., Zhan M., Zhan G., Zhao Q., Zheng L., Zheng X.H., Zhong F.N., Zhou X., Zhu S., Zhu X., Smith H.O., Glbbs R.A., Myers E.W., Wulliams G.M., Venter J.C.; Science 287:2185-2195(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         872 GluaspCysValGlyLeuAspGluValArgGluValMetArg-----
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A593A9CC2167E4B7 CRC64;
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                                                                                                                                                                                                                                                                        InterPro; IPR001314; Chymotrypsin.
InterPro; IPR00024; Fz_domain.
InterPro; IPR0012172; LDL_recept_A.
InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR001190; Srcr_receptor.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PROSITE; PS50038; FZ; 1.
PROSITE; PS501209; LDLRA_1; 1.
PROSITE; PS50068; LDLRA_2; 2.
PROSITE; PS50240; TRYPSIN_DOM; 1.
PROSITE; PS50240; TRYPSIN_DOM; 1.
PROSITE; PS00134; TRYPSIN_BIS; 1.
PROSITE; PS00135; TRYPSIN_BIS; 1.
                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF01392; Fz; 1.
Pfam; PF01392; Fz; 1.
Pfam; PF00085; 1dl_recept_a; 2.
Prian; PF00089; 1rypsin; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00722; CHYMOTRYPSIN.
SNART; SM00061; LDLRECEPTOR.
SNART; SM00192; LDLa; 2.
SNART; SM00202; SR; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glycoprotein; Hydrolase; Serine
SEQUENCE 1379 AA; 149489 MW;
                                                                                                                                                                                                                         EMBL; AE003840; AAF59230.1; -.
HSSP; P00763; 1DPO.
                                                                                                                                                                                                                                                               FlyBase; FBgn0033192; CG2105.
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39.76%
26.98%
18.85%
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                                                                                                                                                                                                                TRYPSIN FAMILY
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
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e G	962	LeuArgLeuSerGluArgAsnGlyAspValGlyThrGlyValLeuGluValTyrArg 980	
٥y	328	ŢĠ	
QQ	981	::: ::: IleGlyGlnArgGlnTrpMetProAlaCysValLysAsnTrpAspArgAlaValSer 999	
δy	376	99	
qq	1000	ProSerAlaValCysSerIleLeuGlyTyrSerAlaValAsnAlaThrSerValLeuThr 1019	
οy	415	TICCCITGTGGGAGGCCCTGGAAGCGG 441	
QQ	1020	GlnLeuThrHisArgProLeuLeuAlaThrValAsnValSerThrAspIleTrpLysMet 1039	
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λ̈	484	CAAGAA 489	
q	1060	TyrProMetalaAspieuThrCysSerAsnTyrGluCysGlyArgValLysArgGlyArg 1079	
λχ	490	GACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGAGACACCCCTGG 549	
ą	1080	HislysProSerArgArg1leIleG1yG1yThrG1nAlaSerProG1yAsnTrpProPhe 1099	
λλ	550	CAGGTGGTCCTGCTGACTCAAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCAC 606	
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ζ	607	CCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGG 666	
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λχ	299	TTGGAGAGTATGACCTGCG	
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ζλ	715	GACATCAAGGAGGTCTTCGTCCACCC 741	
ą	1150	ArgAsnSerPheThrTyrSerGlyGlnLysValLysValLysAlaValIleProHisPro 1169	
λ.	742	AACTACAGCAAGAAGCACCACC GACAATGACATCGCACTGCTGCACCTGGCCCAGCCC 798	
ą.	1170	GlnTyrAsnMetAlaIleAlaHisAspAsnAspIleAlaLeuPheGlnLeuAlaThrArg 1189	
_	799	GCCACCCTCTCGCAGACCATAGTGCCCATCTGCCTCCGGGACAGCGGCCTTGCAGAGCGC 858	
-2	1190	valAlaPheHisGluHisLeuLeuProValCysLeuProProSerValArg 1207	
Ž.	859	GAGCICAATCAGGCCGGCCAGGAGCCCTCGTGACGGCTGGGGCTACCACAGCAGCCGA 918	
ą	1208	AsnLeuHisProGlyThrLeuCysThrVallleGlyTrpGlyLysArgGlu 1224	
Ϋ́	919	GAGAAGGAGGCCAAGAAACCGCACCTTCGTCCTCAACTTCCATCAAGATTCCCGTGGTC 978	
ą	1225	AspLysAspProLysSerThrTyrGluTyrIleValAsnGluValGlnValGnVellelle 1244	
Δī	616	CCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGT 1035	
đ	1245	ThrargashdingysaspdluTrpLeuAspasnLeuThrValSerGluGlyMetValCys 1264	
Ϋ́	1036	GCGGCCATCCTCGGGGACCGGCAGGATGCCTGCGAGGCGCGACAGTGGGGGGCCCATGGTC 1095	
ą	1265	AladlyPheaspaspGlyGlyLysAspAlaCysGlnGlyAspSerGlyGlyProLeuLeu 1284	
γ	1096	GCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGAG 1146	
ą	1285	CysProTyrProGlyGluLysAsnArgTrpPheValGlyGlyIleValSerTrpGlyIle 1304	
Ϋ́	1147	GGCIGIGGCCCCTICACAACTACGCGTTTACACCAAAAGTCAGCCGCTACCTCGACTGG 1206	
۵	1305		

Search completed: March 17, 2003, 17:35:20 Job time: 95.5 secs



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1927.976 Million cell updates/sec
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GenCore version 5.1.4\_p5\_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
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Maximum Match 100%
Listing first 60 summaries
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Xgapop 10.0 , Xgapext 0
Ygapop 10.0 , Ygapext (
Fgapop 6.0 , Fgapext Delop 6.0 , Delext
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Maximum DB seq length: 2000000000
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atabase :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Description	Segnetor 1 appears	Sequence 1 Appli	Segmence 3. Appli	, .	10	. 4				, C	, cN	 8
SUMMARIES	US-08-295-411-1	US-08-955-471-1	US-09-667-570A-3	PCT-US92-10242-1	US-08-756-506-2	US-08-756-506-4	5225537-2	5460953-3	5270178-17	5270178-18	5270178-13	5270178-14
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% Query Match	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.1	97.0	97.0	2.96	7.96
Score	2298	2298	2298	2298	2298	2298	2298	2292	2266	2266	2260.5	2260.5
Result No.	1	7	ĸ	₹	5	9	7	8	6	10	11	12

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09-06 09-66 0178- 09-06 09-66 0178- 0178-	78-21 78-21 78-21 78-21 7469-486 7469-658 7469-658 75-401 75-401 75-411 75-411 75-411 75-411 75-411 75-411 75-411	-327-690- -550-890- -671-003- -1464-233- -1484-203- -1378-907- -2378-907- -231-5154- -001-6154- -00
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1134 1154 116 118 200 200	22222222222222222222222222222222222222	8 6 9 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9

ALIGNMENTS

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TITLE OF INVENTION: Serine Protease-Derived Polypeptides and TITLE OF INVENTION: Anti-Peptide Antibodies, Systems and Therapeutic Methods TITLE OF INVENTION: for Inhibiting Coagulation
NUMBER OF SEQUENCES: 10
CORRESPONDENCE ADDRESS:
ADDRESSEE: Office of Patent Counsel, The Scripps
ADDRESSEE: Research Institute
STREET: 10666 No. 5679639th Torrey Pines Road, TPC 8
                        Sequence 1, Application US/08295411
Patent No. 5679639
                                                                   GENERAL INFORMATION:
APPLICANT: Griffin, John H.
APPLICANT: Mesters, Rolf M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                        92037
                                                                                                                                                                                                                                                                                                                                                                                           S
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US-08-295-411-1
                                                                                                                                                                                                                                                                                                                                                                                  STATE:
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181 AGCCTGTGCGGGCACGCACGTGCATCGACGCATCGGCAGCTTCAGCTGCGACTGC 240
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note= "Protein C Activation
                               SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/295,411
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Mismatches:
Indels:
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Matches:
                                                                                                                    CLASSIFICATION: 350
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/793,989
FILING DATE: 18-NOV-1991
CLASSIFICATION: 530
ATTORNEY/AGENT INFORMATION:
NAME: Fitting, Thomas
REGISTRATION NUMBER: 34,163
REFERENCE/DOCKET NUMBER: TSRI263.0C1
TELECOMOUNICATION INFORMATION:
TELECHONE: 619-554-2937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps:
                                                                FILING DATE: 22-AUG-1994
CLASSIFICATION:
COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OTHER INFORMATION: Peptide"
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2298.00
100.00%
100.00%
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INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 419 amino acids
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; OTHER INFORMATION:
US-08-295-411-1
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                                                                                                            CLASSIFICATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY:
LOCATION:
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John H.
Rolf M.
Serine Protease-Derived Polypeptides and
Anti-Peptide Antibodies, Systems and Therapeutic Methods
for Inhibiting Coagulation
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                                                                                          421 TGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGCAGTCACCTGAAACGAGACACAGAA
                                                                                                                                                     GACCAAGAAGACCAAGTAGATCCGCGCTCATTGATGGGAAGATGACCAGGCGGGAGAC
                                                                                                                                                                   541 AGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC
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                               361 GCGCCTGGCTACAAGCTGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCT
                                                                                                                                                                                                                                                                          601 ATCCACCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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; Patent No. 5968751
; GENERAL INFORMATION:
; APPLICANT: GELIFIA, John H.
; TITLE OF INVENTION: Serine Proteas:
; TITLE OF INVENTION: Anti-Peptide P.
; TITLE OF INVENTION: for Inhibiting NUMBER OF SEQUENCES: 10
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      ADDRESSEE: Office of Patent Counsel, The Scripps ADDRESSEE: Research Institute STREET: 10666 No. 5968751th Torrey Pines Road, TPC STREET: La Jolla STATE: CA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note= "Protein C Light Chain'
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note= "Protein C Activation
                                                                                          COMPUTER READBLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative:
Mismatches:
Indels:
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Matches:
                                                                                                                                                                                                                                                                  NAME: Fitting, Thomas
REISTRATION NUMBER: 34,163
REFERENCE/DOCKET NUMBER: TSR1263.0C1
TELECOMMUNICATION INFORMATION:
TELEPHONE: 619-554-2937
TELEFAX: 619-554-6312
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                                                                                                                                                                   APPLICATION NUMBER: US/08/955,471 FILING DATE:
                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/295,411
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Peptide"
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2298.00
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                    1: 419 amino acids amino acid
                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY: linear
MOLECULE TYPE: protein
HYPOTHETICAL: NO
CORRESPONDENCE ADDRESS:
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LOCATION: 158..169
OTHER INFORMATION: /
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OTHER INFORMATION:
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LOCATION: 170..419
OTHER INFORMATION:
US-08-955-471-1
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                                                                                                                                                                                          CLASSIFICATION:
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Best Local Similarity:
                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                      USA
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                                                                     COUNTRY: US
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961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTT 1020
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                                                                                              241 CGCAGCGGCTGGGAGGCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG 300
                                                                                                                                                                                           301 GACAACGGCGGCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCTGTAGCTGT 360
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                           GACCAAGAAGACCAAGTAGATCCGCGCCTCATTGATGGGAAGATGACCAGGCGGGGAGAC
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GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Baker, Jeffrey C
APPLICANT: Carlson, Andrew D
APPLICANT: Huang, Lihua
APPLICANT: Sheliga, Theodore A
APPLICANT: Sheliga, Theodore A
APPLICANT: Sheliga, Theodore A
APPLICANT: Sheliga, Theodore A
CURRENT STILE REFERENCE: X-11796A
CURRENT APPLICATION NUMBER: US/09/667,570A
CURRENT FILING DATE: 2000-09-21
PRIOR APPLICATION NUMBER: 60/045,255
PRIOR PILING DATE: 1997-04-28
NUMBER OF SEQ ID NOS: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GACCAAGAAGACCAAGTAGATCCGCGGCTCATTGATGGGAAGATGACCAGGCGGGGAGAC 540
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                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
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Sequence 3, Application US/09667570A
Patent No. 6436397
                                                                                                                                                                                                                                                                                                                                            3.34e-167
2298.00
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                                                                                                                                                                                                                                                                               ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                               nment Scores:
                                                                                                                                                                                                                                                                                                 -09-667-570A-3
                                                                                                                                                                                                                                                     LENGTH: 419
                                                                                                                                                                                                                                                                  TYPE: PRT
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Serine Protease-Derived Polypeptides and
Anti-Peptide Antibodies, Systems and Therapeutic Methods
for Inhibiting Coagulation
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APPLICATION NUMBER: PCT/US92/10242
FILING DATE: 19921118
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SYSTEM: PC-DOS/MS-DOS
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APPLICATION NUMBER: U
FILING DATE: 18-NOV-1
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TITLE OF INVENTION:
TITLE OF INVENTION:
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APPLICANT: Garner, Ian
APPLICANT: Cottingham, Ian R.
APPLICANT: Temperley, Simon M.
APPLICANT: Foster, Donald C.
APPLICANT: Sprecher, Cindy A.
APPLICANT: Prunkard, Donna E.
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Peptide"
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Matches:
Conservative:
Mismatches:
Indels:
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                                     SCR0472P
         NAME: Fitting, Thomas
REGISTRATION NUMBER: 34,163
REFERENCE/DOCKET NUMBER: SCR0/
TELECOMMUNICATION INFORMATION:
TELEPAN: 619-554-2937
TELEPAN: 619-554-6312
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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ATTORNEY/AGENT INFORMATION:
                                                                                                                : 419 amino acids
AMINO ACID
                                                                                                                                               MOLECULE TYPE: protein HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                       LOCATION: 158..169
OTHER INFORMATION:
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LOCATION: 170..419
OTHER INFORMATION:
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AGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGAAGCTGGCCTGCGGGGCAGTGCTC
                                                                                    ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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61 ATCTGTGACTTCGAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTC 120
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                         OPERATING SYSTEM: PC_DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
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                                                                    APPLICATION NUMBER: US/08/756,506
                                                                                                            ATTORNEY/AGENT INFORMATION:
NAME: Sawislak, Deborah A
REGISTRATION NUMBER: 37,438
REFERENCE/DOCKET NUMBER: 95-28
TELEPOMMUNICATION INFORMATION:
TELEPHONE: 206-442-6672
TELEFAX: 206-442-6672
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARATERISTICS:
          COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-
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2298.00
100.00%
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Floppy disk
                                                                                                                                                                                                                                           LENGTH: 460 amino acids TYPE: amino acid
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08-756-506-2
                                                                                   FILING DATE:
CLASSIFICATION: 800
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Best Local Similarity:
Query Match:
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              243 IleHisProSerTrpValLeuThrAlaAlaHisCysMetAspGluSerLysLysLeuLeu
ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
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APPLICANT: Garner, Ian
APPLICANT: Cottingham, Ian R.
APPLICANT: Temperley, Simon M.
APPLICANT: Foster, Donald C.
APPLICANT: Sprecher, Cindy A.
APPLICANT: Prunkard, Donna E.
TITLE OF INVENTION: PROPE
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; Patent No. 5905185
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES: 2 CORRESPONDENCE ADDRESS:
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CITY: Seattle
STATE: WA
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Mismatches:
Indels:
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                                                                                                                                                                     Length:
Matches:
        NAME: Sawislak, Deborah A
REGISTRATION NUMBER: 37,438
REFERENCE/DOCKET NUMBER: 95-28
TELECOMMUNICATION INFORMATION:
TELEPHONE: 206-442-6672
TELEFAX: 206-442-6678
                                                                                                                                                                 3.42e-167
2298.00
100.008
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                                                                       INFORMATION FOR SEQ ID NO: 4:
ATTORNEY/AGENT INFORMATION:
                                                                                            LENGTH: 460 amino acids TYPE: amino acid
                                                                                    SEQUENCE CHARACTERISTICS
                                                                                                                          MOLECULE TYPE: protein 108-756-506-4
                                                                                                                   linear
                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                         gnment Scores:
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Mismatches:
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APPLICATION NUMBER: US/07/459,082
FILING DATE: 29-DEC-1989
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                                                                                                                                                                                                                                                                                                                                                                                                  ; Patent No. 5225537
; APPLICANT: FOSTER, DONALD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 461
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           CGCAGCGGCTGGGAGGCCCGCTTCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTG
                                                         GACAACGGCGCCTGCACGCATTACTGCCTAGAGGAGGTGGGCTGGCGGCGCCTGTAGCTGT
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5460953-3
;Patent No. 5460953
APPLICANT: GERLITZ, BRUCE E.;GRINNELL, BRIAN W.
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION GLYCOSYLATION MUTANTS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 3
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Mismatches:
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                                                                                    APPLICATION NUMBER: US/08/93,217
FILING DATE: 09-SEP-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 628,063
FILING DATE: 21-DEC-1990
APPLICATION NUMBER: 484,081
FILING DATE: 23-FEB-1990
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98.07%
                                                                          CURRENT APPLICATION DATA:
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APPLICANT: GERLIZ, BRUCE E.; GRINNELL, BRIAN W.
TILE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION :
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA.
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FILING DATE: 23-FEB-1990
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                              APPLICANT: GERLITZ, BRUCE E.;GRINNELL, BRIAN W
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/484,133
FILING DATE: 23-FEB-1990
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Indels:
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; PATENT NO. 5270178
; APPLICANT: GERLITZ, BRUCE E.;GRINNELL, BRIAN W.
; TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION OF
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APPLICATION NUMBER: US/07/484,133
FILING DATE: 23-FEB-1990
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                  OF
APPLICANT: GERLITZ, BRUCE E.;GRINNELL, BRIAN W.
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION;ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
                                                                                                                                                        460
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                                                                                                                                                                                               Mismatches:
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                                                                                                                                                                                                                                             US-09-763-153-1 (1-1245) x 5270178-14 (1-460)
                                                               APPLICATION NUMBER: US/07/484,133
FILING DATE: 23-FEB-1990
                                                                                                                                                    2.43e-164
2260.50
99.28%
98.55%
96.73%
                                                  CURRENT APPLICATION DATA:
                                                                                                                                                                                           Best Local Similarity:
                                                                                                                                                                               Percent Similarity:
                                                                                                    LENGTH: 460
                                                                                                                                          Alignment Scores:
                                                                                        ; SEQ ID NO:14:
                                                                                                                                                                                                         Query Match:
                                                                                                                                                      Pred. No.:
                                                                                                               5270178-14
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GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Baker, Jeffrey C
APPLICANT: Carlson, Andrew D
APPLICANT: Huang, Lihua
APPLICANT: Sheliga, Theodore A
TITLE OF INVENTION: Improved Methods for Processing Activated Protein C
FILE REFERENCE: aPC process patent
CURRENT FILING DATE: 1998-04-24
EARLIER FILING DATE: 1998-04-24
EARLIER FILING DATE: 1997-04-28
NUMBER OF SEQ ID NOS: 2
SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 1.
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; Sequence 1, Application US/09065872
; Patent No. 6162629
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Best Local Similarity:
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                                                  61 IleaspGlyIleGlySerPheSerCysAspCysArgSerGlyIrpGluGlyArgPheCys
                                                                               CAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGCTGCACGTTACTGC
                                                                                                  81 GlnArgGluValSerPheLeuAsnCysSerLeuAspAsnGlyGlyCysThrHisTyrCys
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APPLICANT: Baker, Jeffrey C
APPLICANT: Baker, Jeffrey C
APPLICANT: Garlson, Andrew D
APPLICANT: Huang, Lihua
APPLICANT: Huang, Lihua
TITLE OF INVENTION: Improved Methods for Processing Activated Protein C
TITLE OF INVENTION: Improved Methods for Processing Activated Protein C
TITLE OF INVENTION: 1964
CURRENT FILING DATE: 2000-09-21
PRIOR FILING DATE: 1997-04-28
NUMBER OF SEQ ID NOS: 3
SCOTTANE: Patentin Version 3.1
: SEQ ID NO 1
: LENGTH: 410
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Matches:
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                                                                         Sequence 1, Application US/09667570A Patent No. 6436397
1228 AAGGAAGCCCCCCAGAAG 1245
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             401 LysGluAlaProGlnLys
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ORGANISM: Homo sapiens
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                                                                                                    GENERAL INFORMATION:
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Pred. No.:
                                                               US-09-667-570A-1
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US-09-667-570A-1
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GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCCATCCTC 1047
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           TCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGCGAGCTCAAT
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TCAAAGAAGAAGCTGGCCTGCGGGGCAGTGCTCATCCACCCCTCCTGGGTGCTGACAGCG
                                              GCCCACTGCATGGATGAGTCCAAGAAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGG
                                                                     AlaHisCysMetAspGluSerLysLysLeuLeuValArgLeuGlyGluTyrAspLeuArg
                                                                                                                                             AGCAAGAGCACCGACAATGACATCGCACTGCTGCACCTGGCCCCAGCCCGGCCACCCTC
                                                                                             CGCTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTCTTCGTCCACCCCAACTAC
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TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION OF
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
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APPLICATION NUMBER: US/07/484,133
FILING DATE: 23-FEB-1990
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Sequence 2, Application US/09065872

Patent No. 6162629

GENERAL INFORMATION:
APPLICANT: Balance 2, Andrew D

APPLICANT: Hand, Andrew D

APPLICANT: Hand, Libua
APPLICANT: Hand, Libua
APPLICANT: Hand, Libua
APPLICANT: Hand, Libua
APPLICANT: Sheliga, Theodore A

TITLE OF INVENTION: Improved Methods for Processing Activated Protein C
FILE REPERENCE: aPC process patent
CURRENT APPLICATION NUMBER: 195/09/065,872

CURRENT FILING DATE: 1998-04-24

EARLIER PRILING DATE: 1997-04-28

NUMBER OF SEQ ID NOS: 2
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APPLICANT: Baker, Jeffrey C
APPLICANT: Baker, Jeffrey C
APPLICANT: Carlson, Andrew D
APPLICANT: Huang, Lihua
APPLICANT: Sheliga, Theodore A
TITLE OF INVENTION: Improved Methods for Processing Activated Protein (
FILE REFERENCE: X-11796A
CURRENT APPLICATION NUMBER: US/09/667,570A
CURRENT FILING DATE: 2000-09-21
PRIOR APPLICATION NUMBER: 60/045,255
PRIOR FILING DATE: 1997-04-28
                                                                                                                                                                                                        HisCysMetAspGluSerLysLysLeuLeuValArgLeuGlyGluTyrAspLeuArgArg
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SOFTWARE: PatentIn version 3.1
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Query Match:
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                 US-09-667-570A-2
        ORGANISM:
TYPE: PRT
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TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION
;ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
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NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/484,133
FILING DATE: 23-FEB-1990
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Indels:
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Matches:
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                                                                                             US-09-763-153-1 (1-1245) x 5270178-16
          .81e-161
                  2218.50
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                                 Percent Similarity:
Best Local Similarity:
Alignment Scores:
                                                          Query Match:
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APC POLYPEPTIDES AND ANTI-PEPTIDE ANTIBODIES, DIAGNOSTIC METHODS AND SYSTEMS FOR INHIBITING APC, AND THERAPEUTIC METHODS
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the PC heavy chain, the amino acid residue
which begin at position 158 and end at 419.
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CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/720,189
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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TELEPHONE: 619-554-2937
INFORMATION FOR SEQ ID NO: 1:
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Rolf M.
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ATTORNEY/AGENT INFORMATION:
NAME: Bingham, Douglas
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: APC
TITLE OF INVENTION: ANTI
TITLE OF INVENTION: APC,
NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19910724
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Counsel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Griffin, APPLICANT: Mesters,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; OTHER INFORMATION:
US-07-720-189-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           unknown
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
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STATE:
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                                                                                                                                                                                                                                     AAGCTCCTTGTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGGAGCTGGAC 711
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                                                                                                                       CGGGGAGACAGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGCTGGCCTGCGGG 591
                                                                                                                                                         GCAGTGCTCATCCACCCTTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAG 651
                                                                                                                                                                                                                                                              ATCGCACTGCTGCACCTGGCCCAGCCCGCCACCTTCGCAGACCATAGTGCCCATCTGC 831
                                                                                                                               21 ArgGlyAspSerProTrpGlnValValLeuLeuAspSerLysLysLeuAlaCysGly 40
                                                                                                                                                                  CTCAACTTCATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAAC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  221 ValSerTrpGlyGluGlyCysGlyLeuLeuHisAsnTyrGlyValTyrThrLysValSer
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        Length:
Matches:
Conservative:
Mismatches:
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                                            Indels:
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1393.00
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100.00%
59.61%
                       Percent Similarity:
Best Local Similarity:
Alignment Scores
                                         Query Match:
DB:
       Pred. No.:
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Search completed: March 17, 2003, 17:38:42 Job time: 56 secs

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Command line parameters:

-MODEL=frame+_n2p.model -DEV-x1p
-Q-CGGGL_LIOSTO_SODO_LVG99763153/runat_11032003_084249_2120/app_query.fasta_1.1415
-Q-CGGGL_LIOSTO_SODO_LVG99763153/runat_11032003_084249_2120/app_query.fasta_1.1415
-UB=Published_Applications_AA -QFMT=fastan -SUFFIX=ADP.rabp.msd_NTCH=0.1
-LOOPCL=0 -LOOPEXT=0 -UNITS=bits -START=1 -END=-1 -MATRIX=blosum62
-TRANS=human40.cdi -LIST=60 -DOCALIGN=200 -THR_SCORE=pct -THR_MAX=100
-THR_MIN-0 - ALIGN=-2.DOAL -QUTFMT=ptc -NORM=ext -HEAPSIZES=500 -MINLEN=0
-MAXLEN=2000000000 -USER-USO9763153_@CGN_1_1_12_@runat_11032003_084249_2120
-NCPU=6 -ICPU=3 -NO_XLPXY -NO_MMAP -LARGEQUERY -NG_SCORES=0 -WALT -LONGLOG
-DEV_TIMEOUT=120 -WARL_TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6
-FGAPEXT=7 -YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7
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Sequence 2, Appli
Sequence 2, Appli
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/ cgn2_6/ptodata/1/pubpaa/USOB_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_PUBCOMB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOZ_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOZ_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_PUBCOMB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_PUBCOMB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_PUBCOMB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USOB_NEW_PUB.pep:*
/ cgn2_6/ptodata/1/pubpaa/USIO_NEW_PUB.pep:*
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                                                                                                                                               March 17, 2003, 17:35:25; Search time 47 Seconds
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GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                         nucleic - protein search, using frame_plus_n2p model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-182-263-1
US-09-978-917A-4
US-10-182-263-2
US-09-978-917A-2
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Maximum Match 100%
Listing first 60 summaries
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Maximum DB seq length: 200000000
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Ygapop 10.0,
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Delop 6.0,
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Sequence 3, Appli
Sequence 1, Appli
Sequence 169, App
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Sequence 4, Appli
Sequence 4, Appli
Sequence 934, App
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Sequence 3, Appli
Sequence 1, Appli
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Sequence 895, Appl
Sequence 895, App
Sequence 895, Appl
Sequence 895, Appl
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Sequence 4, Appli
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Sequence 895, App
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                                                                                                                                                                             US-09-978-295A-169
US-09-978-697-169
US-09-978-192A-169
US-09-998-33A-169
US-09-978-189-169
US-09-978-189-169
US-09-988-615-113
US-09-888-615-113
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us-09-895-793-932
us-09-895-814-932
us-09-759-143-932
us-09-780-669-932
us-09-981-333-23
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US-09-147-947-6
US-10-045-367A-4
US-09-895-793-934
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US-09-822-827-895
US-09-912-559-4
US-10-099-700A-2
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US-09-961-721-4
US-09-808-602-102
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US-09-874-238-6
US-09-335-325-1
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US-09-780-669-895
  US-10-182-263-5
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US-09-118-748-2
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US-09-761-120-1
US-09-873-676-81
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US-09-912-559-3
US-09-967-386-1
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US-10-132-829-5
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APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1, Application US/10182263
Publication No. US20030022354A1
GENERAL INFORMATION:
APPLICANT: Gerlitz, Bruce E
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PRIOR FILING DATE: 2002-02-11
PRIOR APPLICATION NUMBER: 60/189199
PRIOR FILING DATE: 2000-03-14
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                                                     SOFTWARE: Patentin version 3.1
                                         NUMBER OF SEQ ID NOS: 12
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US-10-182-263-1
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LENGTH: 419
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Maxygen Aps; Maxygen Holdings
TITLE OF INVENTION: Protein C or activated protein C-like molecules
FILE REPERENCE: 0219us310 - protein C
CURRENT APPLICATION NUMBER: US/09/978,917A
CURRENT FILING DATE: 2010-10-17
NUMBER OF SEQ ID NOS: 48
                                                                                                                                                                                                                                                   841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG
                                                                                                                                                                                          1021 GAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGACAGT
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 CTGCACCTGGCCCAGCCCACCCTCTCGCAGACCATAGTGCCCCATCTGCCTCCCGGAC
               901 GGCTACCACAGCAGCAGAGAGAAGGAGGCCAAGAGAAACCGCACCTTCGTCCTCAACTTC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; sequence 4, Application US/09978917A; Publication No. US20030027299A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score: 2298.00
Percent Similarity: 100.00%
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Query Match: 98.33%
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LENGTH: 419
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                                                APPLICANT: Jones, Bryan E
APPLICANT: Jones, Bryan E
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
PRIOR PLING DATE: 2002-02-11
PRIOR FILING DATE: 2002-02-11
PRIOR FILING DATE: 2000-03-14
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; Sequence 2, Application US/10182263
; Publication No. US20030022354A1
; GENERAL INFORMATION:
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SOFTWARE: PatentIn version 3.1
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                                      APPLICANT: Gerlitz, Bruce E
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                                                                                GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGAAAGTGGGAGCTGGACCTGGACATC 720
                                        APPLICANT: Maxygen Aps; Maxygen Holdings
TITLE OF INVENTION: Protein C or activated protein C-like molecules
FILE REFERENCE: 0219us310 - protein C
CURRENT APPLICATION NUMBER: US/09/978,917A
URRENT FILING DATE: 2001-10-17
                                                                                                                                                      841 AGCGGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGG
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ORGANISM: Homo sapiens
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Best Local Similarity:
Query Match:
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US-09-763-153-1 (1-1245) x US-09-978-917A-2 (1-461)
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APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-1361
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
PRIOR APPLICATION NUMBER: 60/18199
PRIOR FILING DATE: 2000-03-14
NUMBER OF SEQ ID NOS: 12
SOFTWARE: PATENTIN PRIOR III
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PPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: x-13611
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                                                                                                                                                                                          Matches:
                                                                                                                                                                           Length:
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; PRIOR FILING DATE: 2002-02-11
; PRIOR APPLICATION NUMBER: 60/189199
; PRIOR FILING DATE: 2000-03-14
; NUMBER OF SEQ ID NOS: 12
; SEQ ID NO 3
; LENGTH. 419
; LENGTH: 419
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99.04%
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                                                                                                                        ORGANISM: Homo sapiens
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Best Local Similarity:
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                                                                                                                                   US-10-182-263-3
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APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
PRIOR FILING DATE: 2002-03-11
PRIOR FILING DATE: 2000-03-14
PRIOR FILING DATE: 2000-03-14
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; Publication No. US20030022354A1
; GENERAL INFORMATION:
APPLICANT: Gerlitz, Bruce E
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SOFTWARE: PatentIn version 3.1
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1201 GACTGGATCCATGGGCACATCAGAGACAAGGAAGCCCCCCAGAAG 1245
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Mismatches:
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                                                                                                                                    APPLICANT: JORES, Bryan E
APPLICANT: Grinnell, Brian W
TITLE OF INVANION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT APPLICATION NUMBER: 60/181948
PRIOR PELING DATE: 2002-02-11
PRIOR APPLICATION NUMBER: 60/181949
PRIOR FILING DATE: 2000-03-14
NUMBER OF SEQ ID NOS: 12
SOFTWARE: Patentin version 3.1
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                                                                              Sequence 4, Application US/10182263
Publication No. US20030022354A1
GENERAL INFORMATION:
APPLICANT: Gerlitz, Bruce E
APPLICANT: Jones, Bryan E
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844 GGCCTTGCAGAGCGCGAGCTCAATCAGGCCGGCCAGGAGACCCTCGTGACGGGCTGGGGC 903
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300 IleProHisHisAsnTyrAsnAlaAlaIleAsnLysTyrAsnHisAspIleAlaLeuLeu 319
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                                                                                                                                                                                                                                                                                                                                                                                                                  253 GAGGGCCGCITCTGCCAGCGCGAGGTGAGCTTCCTCAATTGCTCGCTGGACAACGGCGGC 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                   124 GluGlyLysAsnCysGluLeuAspValThr-----CysAsnIleLysAsnGlyArg 140
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                                                                                                                                                                                                                                                                                                73 GAGGAGGCCAAGGAAATTTTCCAAAATGTGGATGACACACTGGCCTTCTGGTCCAAGCAC 132
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                                                                                                                                                                                                                                                                                                                                                193 GGGCACGGCACGTGCATCGACGGCATCGGCTGCAGCTGCGACTGCGCAGCGGCTGG
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                                                     Indels:
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APPLICANT: Chien, Kenneth R
APPLICANT: Chien, Masahiko
TITLE OF INVENTION: Method to treat hemophilia by hepatic gene transfer of Factor VII
TILLE OF INVENTION: With vesicle vector
FILLE REFERENCE: 6627-PA1170
CURRENT APPLICATION NUMBER: US/10/132,829
CURRENT FILING DATE: 2002-04-25
PRIOR APPLICATION NUMBER: 60/286,314
PRIOR FILING DATE: 2001-04-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   961 ATCAAGATTCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTGTCT 1020
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                                               AAGGAGGTCTTCGTCCACCCCAACTACAGCAAGAGCACCACCGACAATGACATCGCACTG
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                         541 AGCCCCTGGCAGGTGGTCCTGCTGGACTCAAAGAAGAAGAGGTGGCCTGCGGGGCAGTGCTC
                                                                                               ATCCACCCCTCCTGGGTGCTGACAGCGGCCCACTGCATGGATGAGTCCAAGAAGCTCCTT
                                                                                                                                                                  GTCAGGCTTGGAGAGTATGACCTGCGGCGCTGGGAGAAGTGGGAGCTGGACCTGGACATC
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blication No. US20030044982A1
SHERAL INFORMATION:
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GENERAL INFORMATION:
APPLICANT: Miao, Carol
APPLICANT: Kay, Mark
TITLE OF INVENTION: Liver-Specific Gene Expression Cassettes, and Methods of Use
                                   958 ITCATCAAGAITCCCGTGGTCCCGCACAATGAGTGCAGCGAGGTCATGAGCAACATGGTG 1017
                                                                                                1018 TCTGAGAACATGCTGTGTGCGGGCATCCTCGGGGACCGGCAGGATGCCTGCGAGGGGGGA 1077
                                                                                                                                                               1078 AGTGGGGGCCCATGGTCGCCTCCTTCCACGGCACCTGGTTCCTGGTGGGCCTGGTGAGC 1137
                                                                                                                                                                                                                            1138 TGGGGTGAGGGCTGTGGGCTCCTTCACAACTACGGCGTTTACACCAAAGTCAGCCGCTAC 1197
                                                                371 TyrLeuArgValProLeuValAspArgAlaThrCysLeuArgSerThrLysPheThr11e 390
                                                                                                                   --AlaLeuValLeuGln 370
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|124 GluGlyLysAsnCysGluLeuAspValThr-----CysAsnIleLysAsnGlyArg 140
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CURRENT FILING DATE: 2001-06-18
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PRIOR FILING DATE: 2000-06-20
NUMBER OF SEQ ID NOS: 18
358 ArgvalPheHisLysGlyArgSer----
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Patent No. US20020076798A1
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                                     141 CysGluGlnPheCysLysAsnSerAlaAspAsnLysValValCysSerCysThrGluGly 160
                                                                                     370 TACAAGCTGGGGACGACCTCCTGCAGTGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGG 429
                                                                                                                             161 TyrArgLeuAlaGluAsnGlnLysSerCysGluProAlaValProPheProCysGlyArg 180
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358 ArgValPheHisLysGlyArgSer------
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US-09-118-748-2
; Sequence 2, Application US/09118748A
; Patent No. US20020031799A1
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Tue Mar 18 16:19:31 2003

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GENERAL INFORMATION:

APPLICANT: Stafford, Darrel W.

APPLICANT: Chang, Jaini
TITLE OF INVENTION: Factor IX Antihemophilic Factor with Increased Clotting
TITLE OF INVENTION: Activity
FILE REFERENCE: 5470-183
CURRENT APPLICATION NUMBER: US/09/118,748A
CURRENT APPLICATION NUMBER: 60/053,571
EARLIER APPLICATION NUMBER: 60/053,571
EARLIER FILING DATE: 1997-07-21
NUMBER OF SEQ ID NOS: 2
SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     155 TyrValAsnSerThrGluAlaGluThrIleLeuAspAsnIleThrGlnSerThrGlnSer 174
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       133 GTCGACGGTGACCAGTGCTTGGTCTTGCCCTTGGAGCACCCGTGCGCCCAGCCTGTGCTGC 192
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Mismatches:
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Matches:
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735.00
52.36%
35.38%
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ORGANISM: Homo sapiens
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958 ITCAICAAGAITCCCGTGGTCCCGCCACAATGAGTGCAGCGAGGTCAIGAGCAACATGGTG 1017
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670 GGAGAGTATGACCTGCGCGCGTGGGAGAAGTGGGAGCTGGACCTGGACATCAAGGAGGTC 729
                                                                                                    234 GlyGluHisAsnIleGluGluThrGluHisThrGluGlnLysArgAsnValIleArgIle 253
                                                                                                                                                730 ITCGICCACCCCAACIACAGCAAGAGCACCACC-----GACAAIGACAICGCACIGCIG 783
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                                                                                                                                                                                                                                                           APPLICANT: Persson, Egon
TITLE OF INVENTION: Coagulation Factor VII Derivatives
FILE REPERENCE: 6286.200-US
CURRENT APPLICATION NUMBER: US/10/109,498
CURRENT FILING DATE: 2002-03-22
PRIOR APPLICATION NUMBER: 60/281,261
PRIOR FILING DATE: 2001-04-03
PRIOR FILING DATE: 2001-03-22
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Matches:
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OTHER INFORMATION: Xaa = Any Amino Acid
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LENGTH: 406
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946 ITCGTCCTCAACTICATCAAGAITCCCGTGGTCCCGCACAATGAGTGCAGGGGAGGTCAIG 1005
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          Mismatches:
                                                                                   US-09-763-153-1 (1-1245) x US-10-109-498-1 (1-406)
                            Indels:
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1006 -------AGCAACATGTGTGTGTGAGAACATGCTGTGGGGCATCCTCGGG 1050
                                                                       1051 GACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGGCCCATGGTCGCCTCCTTCCACGGC 1110
                                                                                                                                              1171 GGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATCCATGGGCACATCAGAGACAAG 1230
                                                                                            335 GlySerLysAspSerCysLysGlyAsDlyBroHisAlaThrHisTyrArgGly 354
                                                                                                                                                                 315 ArgLysValGlyAspSerProAsnIleThrGluTyrMetPheCysAlaGlyTyrSerAsp 334
                                                                                                                                                                                                                                      TITLE OF INVENTION: Secreted and Transmembrane Polypeptides and Nucleic IITLE OF INVENTION: Acids Encoding the Same FILE REFERENCE: P2630P1C11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/978,295A CURRENT FILING DATE: 2001-10-15 PRIOR APPLICATION NUMBER: 09/918585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2001-07-30
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PRIOR PILING DATE: 1997-11-21
PRIOR APPLICATION NUMBER: 60/06534
PRIOR APPLICATION NUMBER: 60/077450
PRIOR PILING DATE: 1998-03-10
PRIOR PILING DATE: 1998-03-11
PRIOR FILING DATE: 1998-03-11
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Gurney, Austin L.
Hillan, Kenneth J
Kljavin, Ivar J.
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Shelton, David L.
Stewart, Timothy A.
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Filvaroff, Ellen
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Napier, Mary A.
Pan, James;
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Botstein, David
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PRIOR PILING DATE: 1998-04-08
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PRIOR PILING DATE: 1998-04-08
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PRIOR APPLICATION NUMBER: 60/08104
PRIOR APPLICATION NUMBER: 60/08105
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R FILING DATE: 1998-03-25

R APPLICATION NUMBER: 60/079656

R APPLICATION NUMBER: 60/079664

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172 CCGTGCGCCAGC-----CTGTGCTGCGGCACGGCACGTGCATC-----GACGGC 216
                                                                                                                                                                                                                                                                                                                                                                                   217 ATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAG 276
                                                                                                                                                                                                                                                                                                                                                                                                            484 AlaThrPhe---GlnCysLysGluAspSer-----ThrCyslleSerLeuProLys 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                337 GTGGGCTGGCGCGCTGTAGCTGTGCGCCTACTACAAGCTGGGGGACGACCTCCTGCAG 396
                                                                                                                                                                                                                                                                                                                                            448 ProCysProGlyGluPheLeuCysSerValAsnGlyLeuCysValProAlaCysAspGly 467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  277 GIGAGCTICCICAATIGCICGCIGGACAACGGCGGCIGCACGCATIACIGCCIAGAGGAG 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       500 Val-------CysAspGlyGlnProAspCysLeuAsnGlySerAspGluGluGln 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               397 TGTCACCCCGCAGTGAAGTTCCCTTGTGGGAGGCCCTTGGAAGCGGATGGAGAAGCGC 456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 516 CysGlnGluGlyVal-----ProCysGlyThrPheThrPheGlnCysGlu---AspArg 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            457 AGTCACCTGAAA-------480
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553 AspGluGluHisCysAspCysGlyLeuGlnGlyProSerSerArg11eValGlyGlyAla 572
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              748 AGCAAGAGCACCACCGACAATGACATCGCACTGCTGCCCTGGCCCAGCCCGCCACCTC 807
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Conservative:
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988 GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTC 1047
                                                                                                                           1048 GGGGACCGGCAGGAIGCCIGCGAGGGCGACAGIGGGGGCCCCAIGGICGCC---TCCIIC 1104
                                                                                                                                                                                                           1105 CACGGCACCTGGTTCCTGGTGGGCCTGGTGAGGGTGAGGGCTGTGGGCTTCAC 1164
                                                                743 LysGlyLysLysAspAlaCysGlnGlyAspSerGlyGlyProLeuValCysLysAlaLeu 762
706 ProlleSerAsn-----AlaLeuGlnLysValAspValGlnLeulleProGlnAsp 722
                                                                                                                                                                                                                                    TITLE OF INVENTION: Secreted and Transmembrane Polypeptides and Nucleic TITLE OF INVENTION: Acids Encoding the Same
                                                                                                                                                                                                                                                                                              1165 AACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
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FILE REFERENCE: P2630P1C27
CURRENT APPLICATION NUMBER: US/09/978,697
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PRIOR PELLING DATE: 1997-11-13
PRIOR PELLING DATE: 1997-11-13
PRIOR PELLING DATE: 1997-11-21
PRIOR PELLING DATE: 1997-11-21
PRIOR PELLING DATE: 1998-03-10
PRIOR FILING DATE: 1998-03-10
PRIOR PELLING DATE: 1998-03-11
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Patent No. US20020169284A1
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Gurney, Austin L.
Hillan, Kenneth J
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APPLICATION NUMBER: 60/062250
FILING DATE: 1997-10-17
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Goddard, Audrey
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Roy, Margaret Ann
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Filvaroff, Ellen
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Kuo, Sophia S.
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Botstein, David
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Pan, James;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Ashkenazi, Avi
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
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R FILING DATE: 1998-04-15
R APPLICATION NUMBER: 60/082568
R FILING DATE: 1998-04-21
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PRIOR PILING DATE: 1998-03-31
PRIOR FILING DATE: 1998-03-31
PRIOR FILING DATE: 1998-03-31
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PRIOR APPLICATION NUMBER: 60/080165
PRIOR FILING DATE: 1998-03-31 NR APPLICATION NUMBER: 60/080334
NR FILING DATE: 1998-04-01
NR FILING DATE: 1998-04-08
PRILING DATE: 1998-04-08
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R FILING DATE: 1998-04-01
R APPLICATION NUMBER: 60/080328
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R APPLICATION NUMBER: 60/080333 PRIOR FILING DATE: 1998-04-15
PRIOR APPLICATION NUMBER: 60/081817
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PRIOR APPLICATION NUMBER: 60/081952 PRIOR FILING DATE: 1998-04-08
PRIOR APPLICATION NUMBER: 60/081203
PRIOR PILING DATE: 1998-04-09
PRIOR APPLICATION NUMBER: 60/081229
PRIOR FILING DATE: 1998-04-09
PRIOR APPLICATION NUMBER: 60/081955 PRIOR APPLICATION NUMBER: 60/081838 PRIOR FILING DATE: 1998-04-08 RIOR APPLICATION NUMBER: 60/081195 PRIOR APPLICATION NUMBER: 60/079728 PRIOR FILING DATE: 1998-03-27 PRIOR APPLICATION NUMBER: 60/079786 PRIOR FILING DATE: 1998-03-27 APPLICATION NUMBER: 60/080194 FILING DATE: 1998-03-31 FILING DATE: 1998-03-25 APPLICATION NUMBER: 60/079656 FILING DATE: 1998-03-26 APPLICATION NUMBER: 60/079663 FILING DATE: 1998-03-12 APPLICATION NUMBER: 60/078004 FILING DATE: 1998-03-13 APPLICATION NUMBER: 60/078886 FILING DATE: 1998-03-20 APPLICATION NUMBER: 60/079294 APPLICATION NUMBER: 60/079689 FILING DATE: 1998-03-20 APPLICATION NUMBER: 60/078936 APPLICATION NUMBER: 60/078910 APPLICATION NUMBER: 60/079664 FILING DATE: 1998-03-27 APPLICATION NUMBER: 60/078939 APPLICATION NUMBER: 60/077791 FILING DATE: 1998-04-15 1998-03-20 1998-03-20 FILING DATE: 1998-03-27 FILING DATE: 1998-03-27 FILING DATE: FILING DATE: PRIOR PRIOR

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PRIOR FILING DATE: 1998-05-07
PRIOR APPLICATION NUMBER: 60/084639
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PRIOR APPLICATION NUMBER: 60/084600
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APPLICATION NUMBER: 60/085338
APPLICATION NUMBER: 60/085323
FILING DATE: 1998-05-13 APPLICATION NUMBER: 60/085580 APPLICATION NUMBER: 60/085339 FILING DATE: 1998-05-13 APPLICATION NUMBER: 60/085700 APPLICATION NUMBER: 60/085689 APPLICATION NUMBER: 60/085579 FILING DATE: 1998-04-29
APPLICATION NUMBER: 60/083558
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APPLICATION NUMBER: 60/083559 60/085582 FILING DATE: 1998-04-29 APPLICATION NUMBER: 60/083499 FILING DATE: 1998-04-29 FILING DATE: 1998-04-28
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APPLICATION NUMBER: 60/083495 FILING DATE: 1998-04-29
APPLICATION NUMBER: 60/083496 APPLICATION NUMBER: 60/083545 FILING DATE: 1998-04-29 APPLICATION NUMBER: 60/083554 FILING DATE: 1998-04-22 APPLICATION NUMBER: 60/082797 FILING DATE: 1998-04-22 APPLICATION NUMBER: 60/082796 PILING DATE: 1998-04-27 APPLICATION NUMBER: 60/083322 FILING DATE: 1998-04-22 APPLICATION NUMBER: 60/082700 FILING DATE: 1998-04-23 APPLICATION NUMBER: 60/08336 APPLICATION NUMBER: 60/082804 FILING DATE: 1998-05-15 FILING DATE: 1998-05-15 FILING DATE: 1998-05-15 APPLICATION NUMBER: 60/ FILING DATE: 1998-05-15 PRIOR FILING DATE: 1998-04-22 FILING DATE: 1998-05-PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR
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172 CCGTGCGCCAGC-----CTGTGCTGCGGCACGGCACGTGCATC-----GACGGC 216
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                                                                                                                                                                                                                                                                                                 217 ATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGTGGGAGGGCCGCTTCTGCCAGCGCGAG 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        988 GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTC 1047
                                                                                                                                                                                                                                                                                                                              277 GIGAGCITCCICAAIIGCICGCIGGACAACGGCGGCIGCACGCAIIACIGCCIAGAGGAG 336
                                                                                                                                                                                                                                                                                                                                                                                                                           484 AlaThrPhe---GlnCysLysGluAspSer-----ThrCysIleSerLeuProLys 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGGGCTGGCGCGCTGTAGCTGTGCCCTGGCTACAAGCTGGGGGACGACCTCCTGCAG 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 500 Val------CysAspGlyGlnProAspCysLeuAsnGlySerAspGluGluGln 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            397 TGTCACCCGCAGTGAAGTTCCCTTGTGGGAGGCCCTGGAAGCGGATGGAGAAGAAGCGC 456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CysGlnGluGlyVal----ProCysGlyThrPheThrPheGlnCysGlu---AspArg 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGTCACCTGAAA-----CGAGACACAGAA 480
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| 553 AspGluGluHisCysAspCysGlyLeuGlnGlyProSerSerArglleValGlyGlyAla 572
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592 IleCysGlyGlyAlaLeulleAlaAspArgTrpVallleThrAlaAlaHisCysPheGln 611
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    612 GluAspSerMetAlaSerThrValLeuTrpThrValPheLeuGlyLysValTrpGlnAsn 631
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Alignment Scores:
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1105 CACGGCACCIGGTICCIGGIGGGCCIGGIGAGCIGGGGIGAGGGCIGIGGGCTCCITCAC 1164
                                                      1048 GGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGCCCATGGTCGCC---TCCTTC 1104
743 LysGlyLysLysAspAlaCysGlnGlyAspSerGlyGlyProLeuValCysLysAlaLeu 762
                                                                                                                                                                            763 SerGlyArgTrpPheLeuAlaGlyLeuValSerTrpGlyLeuGlyCysGlyArgProAsn 782
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PRIOR APPLICATION NUMBER: 60/062250
PRIOR APPLICATION NUMBER: 60/062250
PRIOR APPLICATION NUMBER: 60/064249
PRIOR FILING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/065311
PRIOR PELLING DATE: 1997-11-13
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PRIOR PELLING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/06534
PRIOR APPLICATION NUMBER: 60/077450
PRIOR PELLING DATE: 1998-03-10
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PRIOR APPLICATION NUMBER: 60/077632
PRIOR APPLICATION NUMBER: 60/077641
PRIOR APPLICATION NUMBER: 60/077641
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PRIOR PILING DATE: 1998-03-11
PRIOR APPLICATION NUMBER: 60/077641
PRIOR PELLING DATE: 1998-03-11
PRIOR PELLING DATE: 1998-03-11
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Patent No. US20020177553A1
GENERAL INFORMATION:
APPLICANT: Ashkenazi, Avi
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Grimaldi, J. Christopher
Gurney, Austin L.
Hillan, Kenneth J
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APPLICATION NUMBER: 60/077791
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APPLICATION NUMBER: 60/078004
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Wood, William I.
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Stewart, Timothy A.
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Filvaroff, Ellen
Fong, Sherman
Gao, Wei-Qiang
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Kuo, Sophia S.
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NR FILING DATE: 1998-04-08

R APPLICATION NUMBER: 60/081049

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R FILING DATE: 1998-04-08

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R APPLICATION NUMBER: 60/081259

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R FILING DATE: 1998-04-21
R APPLICATION NUMBER: 60/082704
R FILING DATE: 1998-04-22
R APPLICATION NUMBER: 60/082804
R FILING DATE: 1998-04-22 R APPLICATION NUMBER: 60/079689
R FILING DATE: 1998-00-27
R APPLICATION NUMBER: 60/079663
R FILING DATE: 1998-03-27
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APPLICATION NUMBER: 60/078886
FILING DATE: 1998-03-20
APPLICATION NUMBER: 60/078936 FILING DATE: 1998-03-20 APPLICATION NUMBER: 60/078910 FILING DATE: 1998-03-20 APPLICATION NUMBER: 60/079656 FILING DATE: 1998-03-26 APPLICATION NUMBER: 60/079786 FILING DATE: 1998-03-27 APPLICATION NUMBER: 60/079920 FILING DATE: 1998-03-30 APPLICATION NUMBER: 60/080107 FILING DATE: 1998-03-31 LICATION NUMBER: 60/080165 PRIOR APPLICATION NUMBER: 60/080327 PRIOR FILING DATE: 1998-04-01 APPLICATION NUMBER: 60/081070 APPLICATION NUMBER: 60/079923 APPLICATION NUMBER: 60/080105 LICATION NUMBER: 60/080194 APPLICATION NUMBER: 60/080328 APPLICATION NUMBER: 60/078939 FILING DATE: 1998-03-20 APPLICATION NUMBER: 60/079294 FILING DATE: 1998-03-25 APPLICATION NUMBER: 60/079664 FILING DATE: 1998-03-27 FILING DATE: 1998-04-15 FILING DATE: 1998-03-30 FILING DATE: 1998-03-31 1998-03-3 FILING DATE: 1998-03-3 FILING DATE: PRIOR PRIOR

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R APPLICATION NUMBER: 60/085697 PRIOR APPLICATION NUMBER: 60/082797
PRIOR FILING DATE: 1998-04-22
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PRIOR FILING DATE: 1998-04-23
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                                                                                                                                                172 CCGTGCGCCAGC-----CTGTGCTGCGGGCACGGCACGTGCATC------GACGGC 216
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APPLICANT: Tumas, Daniel Applicant: Tumas, Daniel Applicant: Tumas, Daniel Applicant: William: P. Mickey Applicant: Wood, William: D. Titue OF INVENTION: Secreted and Transmembrane Polypeptides and Nucleic Titue OF INVENTION: Acids Encoding the Same FILE REPRENCE: P2630P1063
CURRENT APPLICATION NUMBER: US/09/999,832A
CURRENT FILING DATE: 2001-10-24
                                                                          1105 CACGGCACCTGGTTCCTGGTGGGCCTGGTGAGCTGAGGGCTGTGGGCTCCTTCAC 1164
1048 GGGGACCGCCAGGATGCCTGCGAGGCGACAGTGGGGGGGCCCATGGTCGCC---TCCTTC 1104
                                                                                               1165 AACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
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CURRENT FILING DATE: 2001-00-30
PRIOR FILING DATE: 2001-00-30
PRIOR FILING DATE: 2001-07-30
PRIOR PELICATION NUMBER: 60/06226
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PRIOR APPLICATION NUMBER: 60/065311
PRIOR PILING DATE: 1997-11-03
PRIOR PILING DATE: 1997-11-13
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APPLICATION NUMBER: 60/078886
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FILING DATE: 1998-03-12
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Grimaldi, J. Christopher
Gurney, Austin L.
Hillan, Kenneth J
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Shelton, David L.
Stewart, Timothy A.
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Gerritsen, Mary E.
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Kuo, Sophia S.
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PRIOR APPLICATION NUMBER: 60/078936
PRIOR FILING DATE: 1998-03-20
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PRIOR PELICATION NUMBER: 60/07969
PRIOR PELICATION NUMBER: 60/07978
PRIOR PELICATION NUMBER: 60/080194
PRIOR PELICATION NUMBER: 60/080199
PRIOR PELICATION NUMBER: 60/080 PRIOR FILING DATE: 1930-04-21
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PRIOR FILING DATE: 1998-04-22
PRIOR PELING DATE: 1998-04-22
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PRIOR PLING DATE: 1998-04-22
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PRIOR APPLICATION NUMBER: 60/082700
PRIOR FILING DATE: 1998-04-22
PRIOR FILING DATE: 1998-04-22

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Length: Matches: Conservative:

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Score: Percent Similarity: Alignment Scores:

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Page 19

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172 CCGTGCGCCAGC-----CTGTGCTGCGGGCACGGCACGTGCATC-----GACGGC 216
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592 IleCysGlyGlyAlaLeuIleAlaAspArgTrpValIleThrAlaAlaHisCysPheGln 611
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                                                                            US-09-763-153-1 (1-1245) x US-09-999-832A-169 (1-802)
              Mismatches:
Best Local Similarity: 33.07%
Query Match: 20.11%
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TITLE OF INVENTION: Secreted and Transmembrane Polypeptides and Nucleic
TITLE OF INVENTION: Secreted and Transmembrane Polypeptides and Nucleic
FILE FEFERENCE: P2630PLC7
CURRENT APPLICATION NUMBER: US/09/978,189
PRIOR FILING DATE: 2001-10-15
PRIOR FILING DATE: 2001-07-30
PRIOR FILING DATE: 1997-11-07
PRIOR FILING DATE: 1997-11-03
PRIOR FILING DATE: 1997-11-03
PRIOR FILING DATE: 1997-11-03
PRIOR FILING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/066364
PRIOR FILING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/066364
PRIOR FILING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/066364
PRIOR FILING DATE: 1997-11-13
PRIOR APPLICATION NUMBER: 60/077450
PRIOR PILING DATE: 1998-03-10
PRIOR PILING DATE: 1998-03-10
PRIOR PRILING DATE: 1998-03-10
1105 CACGGCACCTGGTTCCTGGTGGGCCTGGTGGGGTGAGGGCTGTGGGCTCCTTCAC 1164
                        1165 AACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                                                                      783 TyrPhedlyValTyrThrArgileThrGlyValIleSerTrpIle 797
                                                                                                                                                                                                       Sequence 169, Application US/09978189
Publication No. US20030004102A1
GENERAL INFORMATION:
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Goddard, Audrey
Godowski, Paul J.
Grimaldi, J. Christopher
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NF FILING DATE: 1998-03-11
NR APPLICATION NUMBER: 60/077791
NF FILING DATE: 1998-03-12
NR APPLICATION NUMBER: 60/078004
NF FILING DATE: 1998-03-13
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PRIOR FILING DATE: 1998-03-20
PRIOR APPLICATION NUMBER: 60/078910
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APPLICATION NUMBER: 60/077641
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APPLICATION NUMBER: 60/078936
FILING DATE: 1998-03-20
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Roy, Margaret Ann
Shelton, David L.
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Williams, P. Mickey
Wood, William I.
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Filvaroff, Ellen
Fong, Sherman
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Hillan, Kenneth J
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Kuo, Sophia S.
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Botstein, David
Desnoyers, Luc
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DESTRUCTION DATE: 1998-03-31

OR APPLICATION NUMBER: 60/080194

OR FILING DATE: 1998-03-31

OR APPLICATION NUMBER: 60/080327

OR FILING DATE: 1998-04-01

OR APPLICATION NUMBER: 60/080338

OR FILING DATE: 1998-04-01

OR APPLICATION NUMBER: 60/080338

OR FILING DATE: 1998-04-01

OR APPLICATION NUMBER: 60/080334

OR PILING DATE: 1998-04-01

OR APPLICATION NUMBER: 60/081070

OR APPLICATION NUMBER: 60/081195

OR FILING DATE: 1998-04-08

OR APPLICATION NUMBER: 60/081203

OR APPLICATI
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PRIOR APPLICATION NUMBER: 60/079663
PRIOR APPLICATION NUMBER: 60/079728
PRIOR FILING DATE: 1998-03-27
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APPLICATION NUMBER: 60/082797
FILING DATE: 1998-04-22
APPLICATION NUMBER: 60/082796
FILING DATE: 1998-04-23
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APPLICATION NUMBER: 60/082704
FILING DATE: 1998-04-22
APPLICATION NUMBER: 60/082804
FILING DATE: 1998-04-22
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FILING DATE: 1998-04-15
APPLICATION NUMBER: 60/081819
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FILING DATE: 1998-04-15
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APPLICATION NUMBER: 60/081952
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PRIOR APPLICATION NUMBER: 60/080107
PRIOR FILING DATE: 1998-03-31
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                                                                                                                                                                                                            APPLICATION NUMBER: 60/079656
FILING DATE: 1998-03-26
APPLICATION NUMBER: 60/079664
FILING DATE: 1998-03-27
                                      APPLICATION NUMBER: 60/078939
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                                                                                                                                60/079294
PRIOR FILING DATE: 1998-03-20
                                                                                FILING DATE: 1998-03-20
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                                                                                                                                APPLICATION NUMBER:
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PRIOR PAPLICATION WINBER: 60/08332
PRIOR APPLICATION NUMBER: 60/08332
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PRIOR FILING DATE: 1998-04-29
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Length:	Matches:	Conservative:	Mismatches:	Indels:	Gaps:
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                                                                 448 ProCysProGlyGluPheLeuCysSerValAsnGlyLeuCysValProAlaCysAspGly 467
                                                                                                217 ATCGGCAGCTTCAGCTGCGACTGCCGCAGCGGCTGGGAGGGCCGCTTCTGCCAGCGCGAG 276
                                                                                                                       277 GIGAGCIICCICAAIIGCICGCIGGACAACGGCGGCIGCACGCAIIACIGCCIAGAGGAG 336
                                                                                                                                                                                               484 AlaThrPhe---GlnCysLysGluAspSer-----ThrCysIleSerLeuProLys 499
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| 553 AspGluGluHisCysAspCysGlyLeuGlnGlyProSerSerArgIleValGlyGlyAla 572
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763 SerGlyArgTrpPheLeuAlaGlyLeuValSerTrpGlyLeuGlyCysGlyArgProAsn 782
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                                1165 AACTACGGCGTTTACACCAAAGTCAGCCGCTACCTCGACTGGATC 1209
                                                      CURRENT APPLICATION NUMBER: US/09/978,608A
CURRENT FILING DATE: 2001-10-16
NUMBER OF SEQ ID NOS: 624
Prior Application removed - See File Wrapper or Palm
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Grimaldi, J. Christopher
Gurney, Austin L.
Hillan, Kenneth J
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Paoni, Nicholas F.
Roy, Margaret Ann
Shelton, David L.
Stewart, Timothy A.
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Wood, William I.
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Botstein, David
Desnoyers, Luc
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Kuo, Sophia S.
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Publication No. US20C
GENERAL INFORMATION:
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Best Local Similarity:
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US-09-978-608A-169
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LENGTH: 802
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1048 GGGGACCGGCAGGATGCCTGCGAGGGCGACAGTGGGGGGCCCCATGGTCGCC---TCCTTC 1104
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553 AspGluGluHisCysAspCysGlyLeuGlnGlyProSerSerArgIleValGlyGlyAla 572
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                                                                                                                                                                                          533 SerCysValLysLysProAsnProGlnCysAspGlyArgProAspCysArgAspGlySer 552
                                    500 val------CysAspGlyGlnProAspCysLeuAsnGlySerAspGluGluGln 515
                                                                          397 TGTCACCCCGCAGIGAAGTICCCTIGIGGAGGCCCTGGAAGCGGAIGGAGAAGAAGAGCGC 456
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337 GIGGGCIGGCGGCGCTGIAGCIGIGCGCCTGGCIACAAGCIGGGGACGACCICCTGCAG 396
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Patent No. US20020064856A1
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APPLICANT: PLOWMAN GREGORY
APPLICANT: WHYTE, DAVID
APPLICANT: CHARFDEEL, SEAN
APPLICANT: CHARFDEEL, GLEN
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612 GluAspSerMetAlaSerThrValLeuTrpThrValPheLeuGlyLysValTrpGlnAsn 631
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484 AlaThrPhe---GlnCysLysGluAspSer-----ThrCysIleSerLeuProLys 499
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APPLICANT: MANNING, GERARD
APPLICANT: SUDARSANAM, SUCHA
TILLE OF INVENTION: NOVEL PROTEASES
FILLE REFERENCE: 038602/1214
CURRENT APPLICATION NUMBER: US/09/888,615
CURRENT FILING DATE: 2001-06-26
PRIOR APPLICATION NUMBER: 60/214,047
PRIOR PLILING DATE: 2000-06-26
NUMBER OF SEQ ID NOS: 150
SOFTWARE: PATCHIN VET. 2.1
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988 GAGTGCAGCGAGGTCATGAGCAACATGGTGTCTGAGAACATGCTGTGTGCGGGCATCCTC 1047
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                                                                                                928 GCCAAGAGAAACCGCACCTTCGTCCTCAACTTCATCAAGATTCCCGTGGTCCCGCACAAT 987
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TCGCAGACCATAGTGCCCATCTGCCTCCCGGACAGCGGCCTTGCAGAGCGCGAGCTCAAT 867
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APPLICANT: SUDARSANAM, SUCHA
TITLE OF INVENTION: NOVEL PROTEASES
TITLE OF INVENTION: NOVEL PROTEASES
CURRENT APPLICATION NUMBER: US/09/888,615
CURRENT FILING DATE: 2001-06-26
PRIOR APPLICATION NUMBER: 60/214,047
PRIOR FILING DATE: 2000-06-26
NUMBER OF SEQ ID NOS: 150
SOFTWARE: Patentin Ver: 2.1
BEQ ID NO 108
LENGTH: 850
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Patent No. US20020064856A1
GENERAL INFORMATION:
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CHARYDCZAK, GLEN
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523 LeuPheCysValSerProGlnProAlaCysAsnThrSerSerPheArgGlnHisGlyPro 542
                                                                  LeuIleCysAspGlyPheArgAspCysGluAsnGlyArgAspGluGlnAsnCysThrGln 562
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725 ProProThrGlyGlnArgValArg------SerGlyGluLysCysTrpValThr
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